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THE NATURE AND CONTROL OF ROAD TRAFFIC ACCIDENTS.[1]

By W. R. BLUNDEN,

Professor of Traffic Engineering, University of New South Wales.

Introduction.

IT is not usual for an engineer to address a medical conference. However, one does not need to reflect deeply to appreciate that the theme of today's deliberations covers a field that calls, not only for collaboration between medical and engineering scientists and practitioners, but also for the active participation of a number of other specialists—statisticians, psychologists, enforcement officers and others.

In a figurative way, road accidents have been everybody's concern but nobody's business. The fact is that no single group alone can hope to achieve much in dealing with this extraordinarily complex problem. An interdisciplinary approach is necessary. The fusing of technical disciplines, especially when they range over the physical, physiological and psychological sciences, is difficult.

The "mixed-team" approach in scientific work has been well developed by the operations research scientist and it offers great promise in the field of road safety. Traffic engineering has a strong operations research character, but there are a number of gaps in the coverage it can offer, particularly in relation to human factors. Your decision to bring medical knowledge and skills to bear on this problem will, I am sure, produce results of some consequence.

Traffic Engineering and its Relation to Road Safety.

It is my intention today to speak on the nature and control of road accidents from the standpoint of tne traffic engineer. As I am doing this before a gathering of professional strangers, it might be well to give a brief account of the basic philosophy of traffic engineering, particularly as it relates to road safety.

Traffic engineering is the science of measuring traffic and travel, the study of the basic laws relating to traffic generation and flow and the application of this knowledge to the professional practice of the planning and operation

[1] Read at the North Queensland Medical Conference held at Rockhampton in July, 1960.

of traffic systems to provide for safe and efficient movement of goods and persons.

Apart from the fact that safety is implicit in any definition of the scope and responsibility of traffic engineering, the vital concept of this definition is that of measurement. When one can measure, then laws can be established, standards can be laid down and facilities can be designed—for example: (i) the reaction time and the visual acuity of drivers must be known quantitatively before warning signs, "Stop" signs and other control devices can be properly sited; (ii) headway and gap measurements are necessary to set standards for pedestrian crossings and traffic lights; (iii) one must measure and classify traffic volume before accident rates or exposure indices can be established; (iv) factual data on time, locations and other circumstances of accidents must be gathered before any analysis of their cause or occurrence can be undertaken; (v) measurements of driver and pedestrian behaviour need to be carried out to develop criteria for setting up traffic regulations and establishing design standards; (vi) anthropometric and human engineering data (including human reaction to acceleration and deceleration) are necessary for designing motor vehicles with higher standards of safety.

Whilst it would be unfair to say that progress is not now being made in the collection of data of the kind indicated above, there are nevertheless very large gaps in our inventory. Without more complete data on traffic volumes, for example, it is not possible to say whether Rockhampton has a lower accident rate than, say, Brisbane or Wagga Wagga, whether men are safer drivers than women or whether T-intersections have a better accident record than crossroads.

The technique of manœuvring in traffic depends more on our ability to select a safe gap than slavish observance of arbitrary rules. Mr. R. B. Fisher, a student who recently obtained a master's degree in traffic engineering at the University of New South Wales, carried out an investigation on the distribution of acceptance gaps in merging traffic. By merging traffic we mean left-turn movements into a passing traffic stream. His results show that the median gap for a population of week-day drivers was about 4·3 seconds; however, some drivers moved into gaps of only 1·5 seconds, whilst others waited for as long as eight seconds before attempting to join the traffic stream. It would be worth while attempting to seek a correlation between this essential driving characteristic and a driver's accident record.

Another example of the power of measurement relates to driver behaviour at a "Stop" sign. A very simple experiment would involve an observer at an intersection controlled by such a sign recording the number of vehicles that either come to a stop or a crawl, or go through at higher speed. Analysis of the set of results so obtained permits answers to be given to such questions as the following: (i) whether the sign is badly sited—this is suggested by poor observance; (ii) whether it is lost under certain lighting conditions—for example, the position of the sun—suggested by poor observance at certain periods and at night; (iii) whether or not it is necessary at all—that is, the siting is satisfactory, but the observance is still poor.

One could multiply these examples many times over, but at this stage my object has been simply to show that the problem of road safety is one that is amenable to study and analysis, even though such study is limited by the amount of data that are currently available.

A further reason to take time on this briew review of a traffic scientist's thinking is to give background to some of the concepts which follow concerning the nature and occurrence of road accidents.

Basic Philosophy of the Accident Problem: Definition of the Problem.

There are two broad schools of thought on the basic nature of the road accident problem. They are: (i) that accidents should not and need not occur; (ii) that they are an inevitable consequence of human limitations and desires.

The great preponderance of road safety propaganda and activity is based on the former concept. It results in a moral or preaching approach to the problem and, whilst there is room for the highest moral standards in driving behaviour, there is a great tendency to concentrate attention on the spectacular and extreme and forget that it is the great majority of the normal drivers that have most of the accidents.

The second approach at first sight appears somewhat defeatist and even callous, but it is nevertheless more realistic and can lead to an objective and scientific attack on the problem.

Both approaches recognize that the human factor is of prime importance, but the first endeavours to eliminate it by seeking the perfect driver, whereas the latter is prepared to accept him more or less as he is, study his limitations and desires, and then set about the task of designing traffic facilities, motor vehicles and so on to provide the necessary tolerance to accommodate his errors.

It should be said that in this approach it is, of course, valid to try ways and means of improving the performance of the human element. Some studies have shown a strong positive correlation between accident records of certain communities and the amount of driver-training that is undertaken.

The problem of road accidents could well be viewed in a similar light to the public health problem. It might be said that epidemics are the result largely of human carelessness. As in the case of road accidents, there is good reason to emphasize the individual's moral responsibility in the matter. However, I imagine that your working approach to the problem is to use the knowledge and skills of medical science to develop and apply remedies to the existing population.

The Causes of Road Accidents.

Much argument takes place on the causes of road accidents. The official statistics are misleading. Based in general on the opinion of the officer completing an accident report or on a court judgement, a single cause is assigned and a simple accumulation pronounces speed (say) as the major factor. Inattentiveness may come next, failure to give way and so on.

Traffic accidents, with few exceptions, are complex events arising from the interaction of human, vehicular, highway, traffic and environmental factors. They result from the coincidence in space and time of many independent and, in general, low-probability events. This complex of low probabilities is associated with a huge number of opportunities and therefore control becomes difficult; for example, how can we ensure that 100% of drivers will be 100% attentive all of the time.

Consider the man whose wife asks him to make sure he brings home a pound of butter. Due to business *tempo* he finds no time during the day for this minor chore. On the way home he suddenly remembers, and remembers also that the only delicatessen on his way closes at 6 p.m. He looks at his watch, finds that it is 5.57 p.m. and the shop in question is a mile away. He takes a chance on passing a semi-trailer and the odds are against him. What is the true cause of the accident? Is it (i) his wife's request? (ii) his preoccupation with the business of the day? (iii) his car, which just lacked that extra few horsepower? (iv) the highway, which had only two lanes at the particular point? (v) congestion getting out of town, which put him half an hour behind schedule?

The superficial cause of this accident is quite rightly given as negligence or an "error of judgement in overtaking another vehicle". Surely this is but a symptom of the complex problem of modern high-pressure living.

However, one can argue that, irrespective of the background factors, the driver's task is to exercise such control

over his vehicle on all occasions and at all times as will ensure that no accident will occur. This indeed is what most, if not all, drivers endeavour to do, but occasionally the interaction of all the background factors causes departure from the 100% criterion. In the case considered the surest preventive for the kind of accident described would have been the provision of a divided roadway.

The discussion leads here to one of the greatest fallacies about accident causation. The simple tabulation of the apparent causes of accidents leads to further classification of road accidents into (i) those caused by the human factor (85-90%); (ii) those caused by the motor vehicle (4-5%); and (iii) those caused by the roadway (6-10%).

A common deduction from this is that as the great majority of accidents are due to the human factor, there is little need to concern ourselves with improved roads and vehicles, but we must direct our attention to improving the driver. Whilst we have much to find out in this respect, it is nevertheless quite likely that he is working even now quite close to the limit of his capabilities in the split-second crises that are produced so often by our substandard road system.

The only complete break-through result we have had so far has been the development of the controlled-access motorway, which reduces accident rates by 50-70%. One striking example is reported by Mr. George Webb, traffic engineer of the Californian Division of Highways. A 10·5 mile freeway was constructed between towns supplementing an existing highway. Table I shows accident

TABLE I.

Accident Rates for Periods of 22 Months Before and After Opening of Freeway.

Route.	Accidents.	Volume of Traffic (Vehicles per day).	Accidents per 1000 V.P.D.
Existing highway (before) ..	418	17,600	23·8
Existing highway (after) ..	146	6400	22·8
Freeway (after)	70	21,600	3·24
Total traffic (before) ..	418	17,600	23·75
Total traffic (after)	216	28,000	12·95

figures and traffic volumes for 22-month periods before and after the opening of the freeway.

With the existing route as a control, these figures would indicate that the new and improved route has a very much lower accident rate than the existing route, despite its carrying a larger volume of traffic.

With freeways costing many hundreds of thousands of pounds per mile, it may be argued that this type of solution is unrealistic. However, one should remember that the cost of freeways can be amply justified in terms of vehicle operating costs anyway, and the reduction in accidents can be regarded as a very handsome bonus. A recent study in Massachusetts has shown that the annual savings per mile from accident reduction on a controlled-access motorway were £7000 per mile per year when the volume of traffic was 10,000 vehicles per day and £20,000 per mile per year when the volume of traffic was 20,000 vehicles per day.

Potentially high rewards could be achieved by improved street lighting, safety belts, safety door locks and improved internal design of motor vehicles.

On the matter of street lighting, a comprehensive study undertaken recently by Mr. H. J. Turner, of the School of Traffic Engineering, indicates that night-time accidents in urban areas could be reduced as much as 25% by properly designed street lighting.

The Control of Road Accidents.

Some thoughts on the control of road accidents have been implicit in the foregoing discussion. However, at the working level there are three main functional activities: engineering, enforcement and education.

These fields of endeavour have developed more or less separately, but at the present time there is growing need to interrelate the activities of all of them. Further, the traffic engineering field is beginning to attract a number of very able scientists, and as a result the basic information that is required by all three on the practising front is being mainly generated by the engineering group. It may be instructive to consider the basic relationship between the three functions.

Figure I shows a frequency distribution that is typical of nearly all characteristics of traffic phenomena. In fact, it has a very wide general application to human activity—for example, heights of people or marks in examinations. It is a normal distribution. The abscissa represents a particular characteristic of a group of people—for example, reaction time, speeds of drivers on an open road or patience (or impatience) if such can be measured; the ordinate is the frequency of occurrence of various levels of the characteristic.

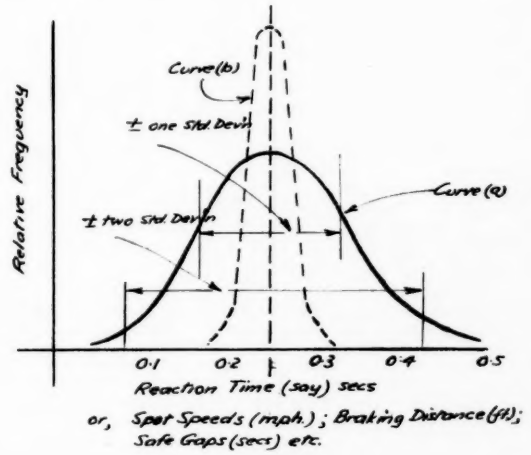

FIGURE I.

Distribution of driving characteristics. Curve (*a*) represents the distribution of the characteristics as they occur; curve (*b*) represents the ideal distribution.

The main properties of this curve, I imagine, are well known to you. Firstly, it defines an average value of the particular property being measured; secondly, it indicates the amount of variability; and thirdly, it shows that there are extreme variations from the average or normal values, but that these are relatively small in number or quantity.

In applying these to our problem of defining the fields of interest of the engineer, the educator and the enforcement officer, we find that the ultimate object of all three is the same, and that is to change the curve to one similar to that shown in dotted form in which the variability is minimized and the extremes are eliminated.

However, in general it is found that characteristics that can be represented by a curve of this nature are rather difficult to change. In fact, in some cases the curve represents a more or less immutable property of an individual or a situation.

The separate fields of endeavour of our three partners in road safety are as follows. The engineer should be concerned with the design of facilities to accommodate the variable, and does not in general find undue difficulty in providing the limits of +1 or −1 standard deviation. Inside these limits we have what is, for all practical purposes, a normal situation. The enforcement officer should be concerned primarily with the tails of the distribution, which represent situations that are significantly different from the general one. The educator should be primarily

interested in the region between the first and second standard deviation where the potentialities for education and training are perhaps greatest.

It is not my intention to trespass further on the activities of the enforcement officer and educationalist, but to offer some thoughts on the difficulties encountered by the engineer in designing for human variables.

Two factors that are commonly taken into account in traffic engineering calculation are reaction time and visual acuity. So far as reaction time is concerned, the traffic engineer allows 0·75 second in urban traffic and 1·5 seconds on rural highways. The Americans allow 2·5 seconds. There seems to be no comprehensive research on the variations in reaction time under a wide range of roadway and traffic conditions encountered by the average driver.

For ordinary design calculations, visual acuity is usually taken as one minute of arc. Here in Australia there is now a close working relation between traffic and lighting engineers and optometrists, but basic data on characteristics of vision have not been scientifically related to accident histories of motor vehicle drivers.

General medical standards are not taken into account in any way at present in designing traffic facilities. A good deal of progress has been made in the field of human engineering, but there has been little direct application of its techniques to the design of motor vehicles and other traffic devices.

An important matter on which the psychologist and social scientist should engage in research is the value the human being attaches to time. This is, in fact, the central issue in all traffic planning and control. Experiments, some of which we have done ourselves, show that in assigning traffic to a route or a mode of transport, time is a most sensitive criterion.

On the safety front, we know pedestrians will risk death rather than walk an additional hundred yards to a marked crossing or set of pedestrian lights. The question of speed is closely linked with the desire of motor vehicle operators to minimize their journey time. Appreciation of the validity of this desire and the nature of the speed distribution leads to speed zoning as a rational and effective way of controlling the speed.

By contrast, arbitrary speed limits, which are honoured only in the breach, not only cause the motorist to lose respect for the law, but miss an opportunity to impress on him the vital importance of the correct use of speed.

Some Medical Aspects of Road Safety.

In turning to this aspect, I am conscious that I speak as a layman. Nevertheless, I feel that here we have the essential element of my contribution, for our real task is to bridge the gap between medical and engineering aspects of the problem.

Just as the engineer has his field of monopolistic interest—the design of traffic works—the medical practitioner is responsible for the treatment of the casualties of road accidents. When one considers that personal injuries from accidents are approximately 20 times greater than fatalities and that the medical cost of an accident is approximately £500, and the total annual cost, taken over the entire nation, is of the order of £20,000,000, the size of the medical task becomes obvious.

However, of more concern to our discussions today are the areas of joint endeavour. In the United States of America some quite spectacular work has already been done on crash injuries by mixed teams of engineers and medicos. The work being done at the University of California's Institute of Transportation and Traffic Engineering is led by Dr. Severy, a medical scientist. An interesting general account of this work is given in the University of California's Extension Board's film "Impact".

A useful account of similar work done at Cornell is Highway Research Bulletin Number 142—"Accident Analysis and Impact Studies".

Table II gives data on the decelerations experienced in a collision with a fixed barrier at 25 miles per hour, and Table III gives data on physiological effects of various accelerations and decelerations on the human body.

I am sure that somewhere in Australia work of this kind must be undertaken. It need not involve full-scale simulated collisions. The important thing is to have a small team actively working on the job. Scientific work cannot be done by post-office type liaison. If we are to benefit from the research done at great overseas centres we must have local workers in the same field. I would add that one of your own colleagues, Dr. J. C. Lane, Director of Aviation Medicine, has done some important work in this field.

TABLE II.

Decelerations Experienced in Motor Vehicle Collisions.[1]

Measurement.	Peak Value of Force	Time to Peak Value from Start of Impact (seconds)	Duration of Force (seconds)
Decelerations:			
Floor pan passenger compartment—right side	30·4 g.	0·065	0·085
Floor pan passenger compartment—left side	29·6 g.	0·069	0·087
Front of frame—right side	88·0 g.	0·022	0·057
Front of frame—left side	80·5 g.	0·022	0·070
Driver chest (impacting safety steering wheel)	75 g.	0·087	Value after peak unobtainable
Right front passenger head (impacting padded instrument panel)	65 g.	0·115	0·037
Belt loads:			
Driver lap belt	2540 lb.	0·087	0·070
Front right passenger lap belt	2440 lb.	0·088	0·110
Rear left passenger lap belt	2900 lb.	0·050	Unobtainable
Rear left passenger shoulder harness belt	2220 lb.	0·055	0·080
Contact points:			
Windshield and head (right passenger)		No contact	
Upper dash (right passenger)		Did not function	
Lower dash (right passenger)		0·063 after impact	

[1] The velocity measuring device recorded a speed of 14·25 inches in 0·03329 seconds, which is equal to 24·4 miles per hour.

Another field for joint activity is the general study of human factors. I have already indicated that the traffic engineer has scanty data on such important characteristics as reaction time and visual acuity. There are many other factors which at present cannot be taken into account at all, in a positive way.

TABLE III.

Physiological Effects of Various Values of G.

Condition.	Approximate Acceleration.
Positive radial acceleration[1]*:*	
Visual disturbance (dimming or greying)	3 to 4G
Loss of vision (blackout)	4 to 5G
Unconsciousness	5 to 6G
Negative radial acceleration:	
Respiratory difficulty, facial congestion	−G
Red out (red vision) mental confusion, poor coordination	−2 to −3G
Transverse acceleration[2]*:*	
Body movements difficult	2 to 4G
Transfer of body weight impossible	4G
Difficulty in breathing	8 to 10G
Blurred vision	12 to 16G

[1] Positive radial acceleration operates from head to foot.

[2] With regard to the limits of deceleration. German tests have shown that with standard seat belts subjects are able to withstand deceleration forces of 20G. There have been instances of persons withstanding as much as 100G.

The traffic engineer is not only concerned with the design of traffic works, but is also interested in ensuring that the basic laws of traffic flow are recognized in the framing of traffic regulations. There is little need to

stress here the importance of knowing more about the effect of alcohol on driving ability, the mechanism of fatigue and velocitation, to mention only a few.

Summary and Conclusion.

In the short time available, I have attempted to discuss some of the basic factors and concepts relating to the problem of road safety. Although I have done this against the backdrop of the relatively new science and practice of traffic engineering, I have not tried to describe in any detail the methods used by the traffic engineer in road accident control. My main theme has been to emphasize that the study and control of traffic accidents calls for the combined efforts of a variety of professional disciplines and certain other specialities.

In developing this theme I have concentrated my remarks on the human factor, as it is one that directly links the endeavours of the engineer and the medico.

In dealing with the human factor I have raised what I consider to be the central issue in the whole problem of road safety—whether we should (i) accept it more or less as it is, study it in order to have more precise understanding of its characteristics and then set about designing traffic facilities to accommodate it, or (ii) base our approach on the premise that the driver is irresponsible to the extent that he deserves the descriptions so often applied to him—selfish, impatient, suicidal, discourteous, incompetent, a "speedhog" and many others—and then tackle the task of reforming him.

In a recent editorial in *The Motor*, an English motor journal, comment was offered on the Easter road toll in Britain. It concluded thus:

> Let us not castigate the driver who shows such remarkable skill in an effort of self-survival; rather place the blame squarely where it belongs—on the shoulders of the politicians who over the years have refused to recognise the needs of mechanical transport.

For obvious reasons, I feel sure that the former approach is the more promising. However, the issue is by no means resolved and there is no doubt that the medical scientist has a weighty contribution to make on this vital matter.

So far as working-level problems are concerned, I have referred more specifically to the problem of crash injuries, for this is a field in which there has been active participation by medicos and engineers already—unfortunately, none of this work has yet been done in Australia. Much more research needs to be done on all aspects of the human factor.

I trust the recognition you have given to the problem by its inclusion on your conference agenda will be the beginning of more active medical participation in what is undoubtedly our greatest national crisis: the casualty rate of Australians is higher today than it was during the war years.

THE FLYING SURGEON SERVICE.[1]

By C. F. A. CUMMINS, F.R.C.S.,
Flying Surgeon, Department of Health and Home Affairs.

NOWADAYS we have reached a stage in medicine when, quite rightly, a very large proportion of surgical cases are treated at some stage by a specialist, and generally speaking the larger the community the more is this fact apparent, the position being most extreme in the big cities.

The total area of Queensland is staggering when one considers that it is more than seven times the total area of the United Kingdom, or nearly three times that of the American State of Texas. The most heavily settled area is along the coastline, and this is naturally where the specialized units are concentrated. The area with which I am primarily concerned is the central and western portion of the State, and this area alone is more than twice the area of the United Kingdom.

It contains many towns whose populations vary from 1000 to 12,000, separated from each other and from the coastal towns by hundreds of miles of mostly indifferent dirt roads, which in wet weather are often impassable.

These small towns each have one or more doctors who, in many cases, are quite recent graduates, and because of these circumstances they frequently find themselves in the position of having to undertake surgical work which, in a larger centre, they would refer elsewhere. In 1958, with this in mind, Dr. Henry Noble, the Minister of Health for Queensland, envisaged a service which would give them some support when they were in clinical difficulties.

The Flying Surgeon Service is administered by the Department of Health and Home Affairs, and thus has no administrative or other connexion with the Royal Flying Doctor Service. Nevertheless, the two are necessarily complementary to each other.

The service was initiated on June 1, 1959, and I would like to give you an outline of the scope of the service and show you some of the work done in the past year since its inception. Some 60 years ago my father, when being commissioned into the British Army, was receiving his medical examination at the hands of a colonel of the Royal Army Medical Corps, who, in the course of the examination, gave him the equivalent in those days of an Ishihara colour test—with a piece of coloured wool.

When asked what colour it was my father replied "Magenta", at which the colonel burst out explosively: "Don't be a damned fool man, just tell me whether it's red or blue." This is perhaps a rather roundabout way of saying that in 60 years' specialism has developed so greatly that the days of the truly general surgeon have all but disappeared, and I ask the indulgence of the many specialists in the audience listening to me talking on subjects which must of necessity come within their specialized ambit.

At the present time the service consists of a team of three people—a surgeon, an anæsthetist and a pilot. When the details of personnel were under discussion before the service started it was suggested that a theatre sister should be one of the team, but I vigorously opposed this and I think the decision has been justified. Each hospital has its own theatre sister and an itinerant one would have to be such a paragon of virtue, tact, competence and character not to cause jealousy or upsets among her professional sisters that I think she would have been found only between the pages of a Victorian novel.

The aircraft used is a Cessna 182 high-wing monoplane. It is a four-seater cabin aircraft with a top speed of 150 miles per hour, and one seat can be converted to a stretcher; this has been needed on only two occasions in the past year, as the aim of the service is primarily to aid the performance of surgery in the peripheral towns rather than the transport of patients to a larger centre.

The service is based at Longreach and serves 21 towns, of which 16 are visited regularly once a month and more frequently if required. We average over 6000 miles a month, which represents about 45 hours' flying time. All the hospitals we visit have a reasonable basic general surgical set of instruments and radiological facilities. The operating theatres range from strictly bush theatres, with only the basic essentials, to a few of the more modern hospitals, in which the operating facilities are equal to many in the larger towns.

Of the 21 hospitals only four have operating theatres which are air-conditioned, and this can be a real problem in a western summer when the shade temperature is 117° F. Even arranging operations for 4 a.m. is an insufficient measure, as the outside temperature is still over 100° F., and with the sterilizers going the temperature and humidity inside the theatre are appalling. I have weighed myself before and after a three-quarter-hour

[1] Read at the North Queensland Medical Conference held in Rockhampton in July, 1960.

operation, and have found that I have lost 4·5 lb., which represents nearly half a gallon of sweat.

Apart from being extremely uncomfortable for the staff it represents a real hazard to the patient, and it is unsafe to drape the whole body as the fluid loss under drapes can be enormous. Approval has been given for air-conditioners in theatres throughout the State as standard equipment and thus this deficiency will soon be remedied.

In passing, I should mention one case—that of a married woman, aged 23 years, with a small-bowel obstruction. She had an ileo-transverse colostomy performed as the pelvis was a matted mass of adhesions. The operation took about an hour, and at the end of it her rectal temperature was found to be 108° F. Ice bags, wet cloths, fans and all the other aids to cooling were rapidly applied, and after 10 minutes the temperature had fallen to only 107° F. It occurred to me that a little internal cooling would perhaps speed this up, and I packed her vagina with lumps of ice. Luckily it was a fairly capacious one, and some 10 minutes later her temperature was down to nearly normal and cooling was stopped. The normal hypothermic after-cooling reduced it still further to below normal, but it soon rose again and the patient was none the worse for her experience.

We carry a fairly comprehensive set of endoscopy apparatus in the way of cystoscopes, bronchoscopes, œsophagoscopes, sigmoidoscope and so on, with a full range of ancillary instruments for them. In the general surgical and orthopædic line the equipment is mainly additional to that which is available locally and includes the various equipment for internal fixation of all fractures and other bone work.

The anæsthetist has a Commonwealth Industrial Gases "Midget Portable" machine and, as all the hospitals we visit keep cylinders of nitrous oxide and oxygen, with this he can give adequate combined anæsthetics in all cases.

Patients are seen in consultation only at the request of another doctor, and during the 12 months up to June 1, 1960, a total of 1350 patients have been examined and 360 operations performed. Of these operations 80 have been emergency ones.

As a general rule we do not carry any nursing staff, but on occasions when a small hospital has been very short of nurses we have taken one with us to help out. However, the present plane is overloaded with four people plus all the equipment, and thus we are hoping to obtain a slightly larger and faster one with the added safety of two engines. A Cessna 310 would be ideal for our purpose. This would not only reduce the flying time considerably, but would allow night flights under certain conditions and enable us to return to base when the hours of daylight remaining for a single engined aircraft would not allow it. A faster aircraft would also reduce considerably the time taken to fly from one end of the territory to the other. For instance, when the Midlander crashed at Boguntungan in February of this year we were at Mount Isa, and it took us five and a half hours to get to Emerald, which included a ten-minute stop at Longreach for refuelling.

Figure I shows the area which the service covers. The following towns are included in the regular monthly visit, and are all ones in which there are one or more resident doctors: Mount Isa, Mary Kathleen, Cloncurry, Julia Creek, Richmond, Hughenden, Winton, Muttaburra, Aramac, Barcaldine, Alpha, Clermont, Emerald, Springsure, Blackall and Isisford. We would only visit places like Boulia or Camooweal, which normally have no resident doctor, if the flying doctor had a patient there who he thought was unfit to be moved, and who required a consultation or operation on the spot.

We have a monthly timetable by which we endeavour to cover the extreme limits of the area at least twice a month. The difficulty arises when an emergency case conflicts with a routine visit to a town where cold surgery may be lined up and where perhaps quite a few out-patients, who may have travelled many miles, are waiting to be examined.

So far this has seldom happened, but it is something which can always upset the schedule and, of course, each case must be considered on its merits. We have radio in the aircraft and can be contacted while in the air. This has so far happened four times, and the communication is obviously useful, as much time can be saved by an alteration of course during mid-flight.

The following are the approximate statistics of the way the work is split up among the specialties; this information gives a rough general idea of the sort of cases occurring most frequently. Fifty *per centum* of the emergency flights have been made in cases of major trauma and fractures. Thirty-one *per centum* have been for major abdominal emergencies. Obstetric complications have accounted for 10% of the emergency flights, and the remaining ones were made for endoscopic examinations (for example, for foreign bodies (6%)), head injuries (2%) and burns (1%).

During the year 27 patients were recommended for transfer to a larger centre. Of these patients five were neurosurgical problems; these were: one case of cerebral

FIGURE I.
Map of area covered by the Flying Surgeon Service.

tumour and one of suspected cerebral tumour, one of a leaking aneurysm in the circle of Willis and two cases of head injury. The orthopædic cases included two cases of prolapsed intervertebral discs in which myelograms were needed and one of traumatic spondylolisthesis which required fixation; other orthopædic problems for which transfer was recommended included an ununited fracture of the tibia and fibula which required bone grafting, no Albee saw being available, a complicated fracture of the humerus for which no Hawley table was available, and a case of spinal tuberculosis. Two patients with pulmonary tuberculosis were referred, also one patient with chronic mastoiditis who required mastoidectomy, three with carcinomas of the tongue or breast, two with hysterical anæsthesia who needed investigation and one with bilateral unstable maxillary and mandibular fractures. Three patients needed the facilities of a larger centre for radiological examination of the gastro-intestinal tract and three required accommodation in a paraplegic unit.

I have a particular interest in thoracic surgery, having spent nine years of my life doing nothing else, but the facilities for this sort of work in the west cannot be as good as in the larger centres. Obviously cardiac and certain pulmonary work should be confined to the special units where there is someone on the spot 24 hours of the day who can pass a bronchoscope and do the other things that one needs to do in a hurry. However, I have been able to do such operations as Heller's cardio-

myotomy, transthoracic gastrectomy and lobectomy away from these facilities. The lack of adequate physiotherapy is the biggest gap in this sort of work and one has to manage it oneself most of the time.

Another practical point is that of electrolyte balances in major visceral work, and this sort of estimation is not available in the smaller western towns. Theoretically one might argue that this should preclude all major abdominal surgery, but I do not think this is so. Looking at it from the broadest viewpoint, there are few patients who need constant, accurate electrolyte balance estimations, and to refuse gastric or intestinal surgery to anyone because one lacks such aids is, I think, unjustified—one has to be realistic about these things and it would be not only impractical, but uneconomic, to send all such patients away.

One major difficulty is the lack of a qualified radiologist to perform such things as barium examinations. The fluoroscopic examination of patients having barium-meal studies done is such an integral part of the examination that films alone have a very limited value. Some of the larger hospitals which I visit have fluoroscopic facilities, but the sets are not very modern ones, and because of the radiation hazard in an old set and the relatively high milliamperage necessary for screening, I have avoided using them altogether. This I think is one of the things I have missed most while in this work. One can, and has, sent some of these patients to a radiologist but this could involve a trip of perhaps up to a thousand miles each way to Brisbane, Rockhampton or Townsville, and obviously such a procedure can be adopted only occasionally. This particular difficulty is one which I am afraid will remain with us for a long time, as the area is too vast to support a radiologist.

The decision to go to a particular case when there are conflicting scheduled visits is one that must primarily be weighed against the experience of the particular doctor and the facilities in that hospital. One soon gets to know the capability of the individual practitioners, and this is generally of a very high order; it has to be, because many of them are so isolated that they frequently have to act quickly and independently.

However, while an appendicectomy or a perforated ulcer is almost invariably handled by the individual doctors, it could be that this operation might well overtax the resources of a man who had had only a year in hospital work after his graduation before coming out to a small country town. In such a case a trip to help him would be quite justified.

There is one other aspect of this sort of case and that is the anæsthetic one. In some of the towns I visit there are two or more doctors and an anæsthetic thus presents no special problems. In some of the one-doctor towns it is often possible for a doctor in a neighbouring town to come, but there are still a few one-doctor towns in which this may not be possible, and while in the past the doctors have managed with the matron giving the anæsthetic, this must introduce some element of risk and in these cases again a trip is more than justified.

I should mention here that I have not hesitated to telephone my colleagues in Brisbane, Rockhampton or Townsville for advice in difficult cases and invariably their help has been given unstintingly and has given me a much greater sense of security.

The weather in the central west is usually kind to us as far as flying conditions are concerned. Fog and mist are exceptional, and, while on the eastern side of the circuit we have had a few rather difficult trips when we have had to fly in rugged country literally at tree-top height to keep land in sight, this is most unusual west of Longreach. The main trouble likely to be encountered is rain, which makes a landing strip unserviceable. As we go to town airports only (as opposed to bush strips) and the majority of these are "all weather" or gravel ones, this seldom worries us. However, on two occasions in the past year a routine trip to one aerodrome has had to be postponed because the strip was a non-gravelled, black-earth one and was unserviceable, and on one occasion with an emergency case we had to wait a few hours for the strip to dry out sufficiently before we landed.

Our very first call, with which we dealt the day after the service started, was to a doctor in a one-doctor town who had had a severe hæmatemesis; he was one of the only two patients we have transported. It was necessary to take him back with us to Longreach where, if he had a further bleed and we were called elsewhere, he would still be under the care of a doctor.

The only other patient was have carried in the plane was a middle-aged, high-grade defective who was badly exsanguinated from a series of hæmatemeses over three days which were not being held in check with transfusions. He subsequently had a gastrectomy and made a very good recovery, but when he was in the plane he was constantly trying to sit up on the stretcher, which, in the cramped space available and with a blood transfusion in progress, was very awkward. My anæsthetist was in turn constantly pushing him down and we both assumed that his condition was responsible for this. However, a few days later he told us that he had never been up in an aeroplane before and he wanted to look out of the window.

Naturally, the work must of necessity embrace the whole field of surgery and I thought it would be interesting to discuss a few of the more unusual cases encountered in the last year. To the various specialists here they will probably seem quite ordinary cases, but taken as a whole they were some of the highlights of a most interesting year.

A man, aged 92 years, sustained a fracture of the mid-shaft of the femur. He had been very active before the accident, and because of this it was thought justifiable to perform internal fixation with a Küntscher nail immediately. This was done with a successful result.

I should mention here that nine fractured necks of femurs have been nailed with Smith-Petersen nails in the last year. At only one of the hospitals at which I performed these operations was a Hawley table available, and thus it was necessary to have a stout-hearted, non-fainting wardsman to hold the leg in the right position after reduction. A reserve in case of fainting is very necessary, as we found on one occasion.

The decision to amputate an arm is always a difficult one, but there was one case in which it seemed justified.

The local doctor of a western town, while driving about his business, noticed a swagman sitting beside the road under a tree; the following day he noticed he was in the same position and stopped and investigated. This old man, aged 79 years, had got drunk some days previously and fallen asleep on his campfire with disastrous results. The stench was appalling. Both the radius and ulna were bared and green in colour and the patient had no sensation or movement in the hand, and obviously total destruction of both median and ulnar nerves. He was very toxic and delirious, and I felt that immediate amputation was the best treatment. This was done and equal anterior and posterior flaps were loosely approximated over "Vaseline" gauze because of the gross sepsis. Secondary suture was performed a few days later and within a week he was up and about and causing the younger nurses no little concern with his amorous advances.

Another case was one which received some newspaper publicity. It occurred on the Winton line and subsequently there was quite a big court case concerning it. A man, aged 26 years, was shot at about 10 yards' range with one barrel of a 12-gauge shotgun containing number 4 shot. When examined about 11 hours after the incident he obviously had intraperitoneal damage to viscera and the abdomen was explored.

Incidentally, the latest edition of Hamilton Bailey's "Emergency Surgery", which, in my opinion, is a really first-class practical book, rather falls down here. He states that when a patient is peppered in the abdomen it is justifiable to adopt a conservative attitude as the intestinal wounds are so minute that they are virtually self-sealing, and it is exceptional for surgical intervention to be needed. This has not been my experience in this and three other cases I have seen in the past.

This man had 22 perforations involving his jejunum, ileum, sigmoid colon and bladder and at least six of the bowel perforations were tangential slits as much as 5 mm. in

length and most certainly would not have sealed off spontaneously. They were all closed in the transverse axis of the gut. The bladder holes, which had allowed some urine to escape into the peritoneal cavity, were merely closed with a purse-string suture and a Foley catheter was put in for a few days.

When one is considering doing a leg amputation for a patient of low intelligence I believe it is often necessary to tailor the leg to the victim's mental and economic circumstances. In backward countries, such as India, I found this was most essential. Although indigent people requiring prostheses are supplied with them free by the Department of Health and Home Affairs on the recommendation of a specialist, many of the aborigines have not the mental capacity to cope with a modern piece of apparatus like this, that needs fairly careful and intelligent upkeep. In such a case it is useless to produce a perfect above- or below-knee stump if the management of the prosthesis supplied is beyond the patient's capabilities. In these cases, and in the elderly, a very good case can be made out for a Symes amputation in suitable circumstances, or a very short, below-knee kneeling stump for others. In one case a simple prosthesis was made for a kneeling stump at a cost of 5s. by a local carpenter, which, while not exactly æsthetic, was at least cheap and practicable.

A little aboriginal child, aged 12 months, had an enormous tumour in her abdomen. An intravenous pyelogram showed a normal left kidney and no dye excretion by the right one. The patient was pyrexial and had many pus cells in her urine. A diagnosis of congenital cystic kidney was confirmed at operation, and it was so large that the child had almost to be dissected away from the tumour.

I have opened the abdomen, perhaps unnecessarily, in two cases in the last year; one patient had a pre-operative diagnosis of leaking ulcer and the other acute intestinal obstruction. Both were cases of purpura. Only one of the patients had a few purpuric spots, and these were on his back and, I regret to say, were found only after operation. However, even if one bears the diagnosis in mind, the abdominal signs can so mimic those of other lesions, and as intussusception is a well-recognized complication, it seems to me that exploration is usually mandatory.

The picture at operation was similar in both cases—the whole intestine was congested and the higher up the gut one explored, the more frequent were the subserous hæmorrhages. They were absent in the terminal part of the ileum and maximum about the upper third of the jejunum. Both patients made an uninterrupted recovery, but I would be glad to hear opinions upon whether a splenectomy should be considered in these cases. It was not done here.

Acknowledgement.

In conclusion, I should like to pay a tribute to all the practitioners with whom I have worked in the last year, without whose help this service could never have got on to the firm basis that it enjoys. I would also like to thank Dr. H. Noble and Dr. A. Fryberg, who have supported me so admirably, particularly with all my requests for equipment, all of which without exception have been granted.

Addendum.

Since this paper was delivered the second year of operation of the Flying Surgeon Service has been completed. Since January, 1961, we have had a Cessna 310 twin-engined aircraft which cruises at 200 miles per hour at 65% power. This larger and faster plane has allowed an extension of the service to Roma, 360 miles south-east of Longreach, and has generally improved the facilities by decreasing the flying time, although the average monthly mileage has risen to about 10,000 miles. This aircraft is fully equipped for instrument flight, and thus when necessary night flights may be made safely. A portable diathermy apparatus has been added to the equipment, which considerably increases the scope of surgery.

The volume of work during the second year closely approximates that done in the first and it is now evident that this service is an integral and established part of the medical facilities in western Queensland.

INFLAMMATORY TUMOURS SIMULATING CARCINOMA: AN ACCOUNT OF FOUR CASES.[1]

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Introduction.

IT is well known that inflammatory reactions, particularly the more chronic ones, may be responsible for the production of much new tissue and the consequent formation of tumours. On the external and mucous surfaces of the body, where such tumours can be easily subjected to biopsy, no great difficulty arises, but when these tumours occur in the closed cavities of the body, where biopsy necessitates a major operation and where there may be great difficulty in obtaining a representative piece for section, management can become very difficult. I wish today to present briefly four cases which have been seen over the past seven years at the Cairns Base Hospital and which have presented such difficulty in management.

Case I.

The patient was a female, aged 43 years. She gave a past history of a rather vague "kidney trouble" since the age of 13 years, and apparently at one stage had been regarded as a case of thyroid deficiency following thyroidectomy. In March, 1953, she attended the out-patient department, complaining of constant tiredness and of pains in the back and calves. On clinical examination no abnormality could be found and she was treated symptomatically. In August, 1953, she presented complaining of backache and shivering attacks for the past two weeks. Some frequency of micturition was present, but no scalding. She did not respond to a course of sulpha therapy, and on September 7, 1953, she was admitted to the ward for observation with a provisional diagnosis of acute-on-chronic nephritis. She was still complaining of shivering attacks and backache, and stated that for two days (since taking a dose of castor oil) she had a feeling as of a lump in the rectum.

On examination she had a temperature of 99·2° F. Her blood pressure was 165/100 mm. of mercury. Some tenderness was present in the lower part of the abdomen. On rectal examination it was noted by the junior resident medical officer admitting her that there was a "peculiar constriction" high up in the rectum. Microscopic examination of the urine on admission to hospital showed a large number of pus cells, but three days later it was reported as follows: "Many granular casts, leucocytes and pus cells detected." The diagnosis of acute-on-chronic nephritis was regarded as being confirmed, and it was not until some three weeks later that a rectal and vaginal examination was performed by the senior resident medical officer. He noticed a large, hard, fixed mass in the left side of the pelvis involving the uterus and the lateral wall of the pelvis. An intravenous pyelogram showed a mild hydronephrosis with loss of cupping in the calyces of the left kidney. The patient was transferred to the Brisbane Hospital with a diagnosis of probable inoperable pelvic carcinoma.

I am indebted to the Queensland Radium Institute and to Dr. Neville Davis for the notes of her management at that institution. The history elicited was as given at the Cairns Hospital. The pelvic findings were described as a large mass on the left side, thought to be fixed to the side wall on the left. An attempt at sigmoidoscopy was unsuccessful, as the instrument could not be passed. A barium-enema X-ray examination was reported as follows:

> There is gross narrowing at the recto-sigmoid junction. The appearance is that of a bowel carcinoma in this area and not that of extrinsic pressure.

Curettings of the uterus showed no abnormality on histological examination. As a result of these findings

[1] Read at the North Queensland Medical Conference held at Rockhampton in July, 1960.

laparotomy was carried out by Dr. Davis early in November, 1953. Findings were as follows:

> The rectosigmoid junction and the cervix were involved in a craggy hard mass which filled the Pouch of Douglas and spread laterally to the fixed bony pelvis. The uterus was enlarged and hæmorrhagic. The tubes were inflamed but the ovaries normal. There were no secondaries in the liver. Stomach and duodenum normal. Large bowel distended and full of fæces, subacute intestinal obstruction. It was considered that the lesion originated either in cervix or in the rectum and has spread to cause a frozen pelvis.

A transverse colostomy was carried out, but a biopsy was not taken.

After this, deep radiotherapy was administered to a total of 3000*r* tumour dose over a period of 18 days, and after convalescence the patient was returned for follow-up at Cairns. The residual mass palpable when she returned here was very much as it had been before she was sent to Brisbane. She was seen at three-monthly intervals at the Radium Clinic subcentre. A mass was felt in the pelvis until June, 1957, but in October, 1957, I could feel no mass whatever. As the colostomy was becoming stenosed and operation was in any case indicated for this, it was decided to carry out an exploratory laparotomy at the same time. This was done on March 6, 1958. To my great surprise there was practically no abnormality to be found within the abdomen. There were a few very fine adhesions between the rectum and the posterior surface of the uterus, but not enough to occlude the pouch of Douglas. There was no sign of any tumour mass or secondary growth anywhere. The abdomen and the colostomy were closed. Since that time the patient has remained well and regular follow-up examinations were ceased in November, 1958. However, I have kept in touch with the patient and she remains extremely well. The survival time of nearly seven years following what was intended as palliative radiotherapy and the disappearance of the mass makes it practically certain that this was not in fact a malignant mass originally.

Case II.

The patient was a female, aged 34 years, who was transferred to this hospital from a country town by her private doctor. In his letter he stated that seven weeks previously he had performed a laparotomy for a persistent and long-standing pain in the right iliac fossa. He had found the pelvis a "mass of adhesions", but had located the appendix and removed it. Three weeks after the operation the patient had developed a severe pain in the right loin and had become feverish. This settled down with conservative treatment, including antibiotic therapy, but she continued to have bouts of severe pain in the right loin and a mass eventually became palpable in the right side of the abdomen.

On arrival at this hospital she appeared very ill. The right side of her abdomen was tender and guarded and there was a suggestion of a mass in the right lower quadrant. The abdomen was slightly distended. A diagnosis of probable intraabdominal abscess with subacute bowel obstruction was made, and laparotomy carried out with the intention of draining this abscess. Somewhat surprisingly, a hard mass 1·5 inches in diameter in the lateral wall of the caecum was discovered. This was invading the musculature of the lateral abdominal wall. The appearance and feel of the tumour were identical with those of caecal carcinoma, and it was considered that it must have been responsible for the original symptomatology and for the patient's present condition. Right hemicolectomy was proceeded with. Convalescence was fortunately uneventful, as the pathologist's report was as follows:

> Terminal portion of ileum and caecum. At lower end of caecum there is a hard tumour 3 cm. × 4·5 cm., cut surface of which contains yellow fatty tissue.
>
> Section. I can see no evidence of any neoplasm, and the lesion appears to be chronic inflammatory in nature only. I have sent the section to Dr. Tonge who considers that the fibrosis together with giant cells in some of which crystalline refractile objects can be seen under polarized light, suggests the possibility of a talc granuloma.

The patient has remained well since, apart from a few attacks of mild abdominal pain of undiscovered ætiology.

This patient was opened with the provisional diagnosis of an intraabdominal infection; however, the findings seemed so typical of a carcinoma of the caecum that a radical operation was proceeded with. Of course, a number of clues as to the true nature of the condition preceding the operation were given to us. However, I submit that even if they had been given more weight than they were it would have been very difficult to close this abdomen without performing a radical operation. The difficulty of obtaining a representative biopsy in the region must be very great, and a negative report from a biopsy of the stony-hard mass discovered would have been accepted with great reserve.

Case III.

The patient was a male, aged 24 years, who was admitted to hospital on December 23, 1957, with a letter from the superintendent of a smaller hospital. He had presented on November 29, complaining of pain in the left, upper part of the abdomen for three days. The pain kept "coming and going away". It was worse on movement or breathing, but there were no urinary or bowel symptoms. The pain was accompanied by a fever of 100° to 101° F., which did not respond to penicillin or "Achromycin" therapy. However, it gradually subsided during the next week.

On his arrival at this hospital he was complaining only of a "sore side". On examination, he was seen to be a very thin lad, but otherwise he looked fairly well. The only positive finding was a lump in the upper left part of the abdomen. This was movable and did not appear to be in the spleen. It felt quite hard. He was completely afebrile and remained so for 10 days. During this time the lump remained unchanged or increased perhaps a little in size. Microscopic examination of the urine and an intravenous pyelogram showed no abnormality. His hæmoglobin level was 14 grammes per 100 ml. and a blood smear was reported as normal, though unfortunately a differential count was not recorded. He was seen in consultation by our consulting physician, who considered a renal tumour the most probable diagnosis.

Abdominal exploration through a left upper paramedian incision was carried out on January 2, 1958. The findings were of a stony-hard tumour involving the splenic flexure of the large bowel and the surrounding peritoneum and retroperitoneal tissue. The mass was irregular and depressed in places and, in my estimation, had exactly the appearance of a malignant tumour of the sigmoid colon. Trial dissection showed that it could not be separated from the left kidney. After much hard thought it was decided to carry out a radical operation involving the left half of the colon, the left kidney and the upper half of the left ureter. This was done *en bloc*, the inferior mesenteric artery being divided at its origin. Continuity was restored by a double-barrelled colostomy. Convalescence was a little stormy, owing to a prolonged ileus, but eventually the patient made a good recovery. The colostomy was closed by crushing of the spur and later on extraperitoneal operative closure. The pathologist's report on the specimen was as follows:

> Kidney 8 cm. × 5 cm., portion of colon 20 cm. and hard tumour situated between lower pole of kidney and colon 5 cm. × 2 cm. × 3 cm.
>
> Section. I can see no evidence of neoplasm. There is granulation tissue and a marked chronic inflammation which appears to merge into the renal tissue. This probably arose from an inflammatory lesion at lower pole of kidney.
>
> I sent section to Dr. Tonge who agreed.

This operation took place a few days after the patient described in Case II had been operated on and before

the pathology report from that case had been received. I can assure you that the experience of receiving the two pathology reports within a few days was very unnerving. Once again it might be considered that the clue of a febrile beginning to his illness preceding the appearance of a mass would have been sufficient indication of its inflammatory nature. Unfortunately, the appearance at operation belied this, and once again I consider that an attempt to obtain a biopsy would have been unsatisfactory. The result, of course, would be negative, but one would have had grave doubts as to whether a representative section had been obtained. Fortunately, the young man remains well.

Case IV.

The patient was a male, aged 26 years. He was admitted to the hospital on February 2, 1959, complaining that he had been well until five days previously, when he had started to have soft bowel motions. Three days before this had become a frank diarrhœa, with loose, watery motions stained pink with blood. For one day he had been having severe tenesmus. No dysuria was present at that stage.

On examination he was a tired, ill-looking young man. His pulse rate was elevated, but he was afebrile, and the only significant finding on general physical examination was a mass in the rectum which was first described as "granular swellings all round lumen causing some stricture formation". The lumps were described as hard and tender. Over the next week his condition deteriorated, he suffered from much pelvic pain and tenesmus and he began to show signs of intestinal obstruction—namely, abdominal distension and increased peristaltic sounds. He also experienced difficulty and pain associated with micturition. During this week two proctoscopic examinations for the purpose of biopsy of the mass were made. The mass was ragged and irregular with a necrotic-looking surface and a stony-hard feel to the end of the proctoscope. At this stage the lumen could not be found with the finger and the mass was very large and fixed. A barium-enema X-ray examination was attempted, but the patient, not surprisingly, could not retain it and no report was possible. As his condition worsened laparotomy was carried out on March 4, 1959. The large bowel was loaded with hard fæces, there were no glandular enlargements to be felt along the course of the aorta or the interior mesenteric artery and the mass in the pelvis could be felt only by invaginating the bladder. An iliac colostomy was performed. Thereafter his general condition improved rapidly and by April 11, 1959, he was discharged from hospital for observation. At the time of laparotomy a further biopsy of several portions of the rectal mass were taken through the proctoscope. Dr. W. Horsfall, of the Commonwealth Laboratory, Cairns, reviewed all the sections and also sent them to Dr. J. Tonge and Dr. M. O'Reilly, of the Brisbane Health Department, for a second opinion. All were essentially the same and I quote in full the report received from Dr. O'Reilly on a section taken on April 2, 1959:

> Microscopic. Examination of this biopsy shows no evidence of any neoplasm. Professor Canny has seen this and the previous biopsy and is in agreement with this finding. An unusual and probably significant feature of this specimen is the presence of many rounded collections of histiocytes arranged on the periphery of a clear space which was probably occupied in the fresh state by some fatty or oily substance. This type of reaction is not characteristic of the tissue response to broken down human lipoid substances and raises the suspicion that some foreign oily material may have found its way to the rectal mucosa by some means or other.
>
> Similar foci are present in the original biopsy though not so numerous or so striking. An inquiry as to any injections in this region — or as a remote possibility, the ingestion of any mineral oils — might help in the diagnosis.

After his discharge from the ward on April 11 the patient was watched at the out-patient department. His general health remained quite good; in fact his condition improved a great deal. The mass also appeared to become smoother and much less painful than it had been, but there was no significant decrease in its size. He was readmitted to hospital on June 12 for further biopsy, but the report received from Dr. Horsfall and also the second opinion from Dr. O'Reilly showed that there was no change in the histology of the mass. The patient then went to Brisbane for a second opinion and consulted Dr. Neville Davis at the South Brisbane hospital, who, in turn, referred him to Dr. Jeff Watson, consultant urologist at the South Brisbane Hospital. Numerous investigations were carried out and a tentative diagnosis was agreed on of eosinophilic granuloma of the prostate. I was not previously familiar with this condition, but Dr. Watson has kindly provided me with some notes on it. It appears to be a rare condition usually occurring in asthmatics and associated with urinary symptoms. Dr. Davis advised treatment with prednisone (10 mg. six-hourly), and in due course he was returned to Cairns for follow-up, still, of course, with his colostomy.

When first examined by me after the patient's return on September 14, the mass appeared to be definitely smaller and softer and examination caused practically no pain—in marked contrast to his condition on admission to hospital. Since that time he has remained very well and the dose of prednisone has been reduced to 10 mg. three times daily, because of the development of a very definite degree of moon-face. This small reduction in the dosage has caused his moon-face to disappear. His general health is excellent and his colostomy is performing well. When last examined on May 31, 1960, the rectal mass was still quite large (at least as large as a fist), yet very much smaller than it had been soon after the patient's admission to hospital, and there is no tenderness. There is a well-defined lumen through the mass. Cystoscopy performed on that date (May 31, 1960) showed a normal bladder mucosal pattern with normal ureteric orifices, but there was still some elevation of the trigone.

This case history is included because it shows the reluctance with which a negative result from a biopsy in the case of a stony-hard and apparently malignant mass is accepted. There is no doubt, of course, that the mass was not malignant. Whether it was in fact an eosinophilic granuloma seems to me to be doubtful in view of the absence of an allergic history and the histological reports which consistently did not show any increase in the eosinophils, but did consistently suggest lipoid vacuoles throughout the mass. The response to prednisone could have been non-specific, or even perhaps coincidental. His present rate of progress suggests that it will be perhaps three or four years before his mass is completely resolved, and it will be possible to close the colostomy.

Conclusion.

I have presented these four cases because each one is of some intrinsic interest and because collectively they do illustrate that inflammatory tumours within the abdominal cavity can closely simulate carcinomas and present great difficulty in diagnosis and treatment. In cases I, II and III the assessment that the lesion was malignant was incorrect. I do not know if a different decision could have been reached in any of these cases, although in each of them there was a hint as to the true nature of the pathology; but the evidence for apparent malignancy was so great at the time of exploration that the surgeon, under the circumstances, had very little choice. All of the patients were younger than the common age for malignancy, but no younger than other patients who have in fact had malignant tumours. The slight pyrexia in cases II and III was not incompatible with the diagnosis of malignancy. Perhaps it could be argued that the outlook, if the lesions had been malignant, was so bad that very little would have been lost by waiting a few weeks or months to see what direction the diseases took, but when faced with an individual patient such treatment seems rather callous.

SOME REMARKS ON TONSILS AND ADENOIDS.[1]

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Introduction.

THE commonest operations today must be tonsillectomy and adenoidectomy. The public has almost come to regard these operations as the Jewish people regard circumcision. The number done annually was quoted in 1958 as 200,000 in England and 1,500,000 in the United States of America. The total cost to the community is very high and one must wonder how much of this money is wisely spent. You will have read Fry's article on tonsils and adenoids in England (Fry, 1957), and perhaps the devastating paper by Bakwin in the *Journal of Pediatrics* (Bakwin, 1958). Bakwin concludes in his summary: "Numerous studies reported in the literature fail to demonstrate any benefit from the operation"; but Fry states in his conclusions: "The operation is unquestionably of real value in a small proportion of children", and he states that the rate for tonsillectomy and adenoidectomy in his own practice is 5% — 40 operations in 10 years, for various indications, including "parental pressure that could not be resisted in six". Even the critical Fry had six children operated on against his better judgement.

Indications for Tonsillectomy and Adenoidectomy.

The operation has been recommended for almost every disease, but the indications have become fewer today. It seems that a reasonable list of indications could be drawn up, with most doctors adhering to this list. But this is not as simple as it sounds. Epstein (1937) said: "The physician does not know an infected tonsil when he sees one!

Many doctors state that there is a period in a child's life in which the lymphoid tissue throughout the body hypertrophies and that at a later age it returns to normal. However, A. R. Hollender, of Florida, states (1959): "Evidence suggests, moreover, that the secretion of adrenocortical hormones controlled by the pituitary adrenotrophic hormone is the normal mechanism regulating lymphoid tissue mass." He also states: "Atrophy of the nasopharyngeal lymphoid tissue is not an invariable development of advancing age, the incidence of the enlargement of this tissue having been found to be relatively high in older patients." He arrived at this latter conclusion by doing a large series of autopsies on unselected cadavers of elderly people.

I am not opposed to the operation. I perform it often, and I see good results. I have no set list of signs and symptoms on which I recommend operation and I respect other doctors' reasons for recommending it. Indeed, I teach my residents that one of the indications for tonsillectomy and adenoidectomy is the opinion of the family doctor. In Australia nearly every general practitioner performs the operation and, for the most part, does it very well. There is a minority which does it badly, or does the tonsillectomy well and the adenoidectomy badly. I think adenoidectomy is the most badly performed operation in the whole range of surgery. This is due to its being badly taught and a "blind" operation. The operator cannot see, but he can and should feel, and no matter how much adenoid tissue is produced by the first sweep of the curette, the nasopharynx should be palpated and the residue, if any, attacked until palpation shows that no adenoid tissue is left. In the MEDICAL JOURNAL OF AUSTRALIA of May 14, 1960 the latest edition of Simson Hall's well-known textbook is reviewed, and the reviewer says: "It is a pity that the tendency to badly performed adenoid operations is not overcome in this widely-used textbook by a more complete description of that procedure and with adequate illustrative diagrams."

A badly performed tonsillectomy and adenoidectomy may leave scarred Eustachian and tonsil pillars, residual adenoid tissue with synechiæ and tonsil stumps, and may involve removal of the tonsil pillars, the uvula and even part of the palate. I see a number of patients who have had a "tonsillectomy", who come to me with acute tonsillitis or quinsy, and others who have had an operation on their adenoids and who still have nasal obstruction, mouth breathing, chronic sinusitis and chronic or intermittent otitis media. We should all repeat often the litany of the late Sir Robert Hutchinson (1953) which runs:

> From inability to let well alone,
> From too much zeal for the new and contempt for what is old,
> From putting knowledge before wisdom, science before art, cleverness before common sense.
> From treating patients as cases,
> From making the cure of the disease more grievous than the endurance of the same,
> Good Lord deliver us.

We will all admit that we will not cease performing tonsillectomy and adenoidectomy, so we should at least be sure that we are doing the operation effectively.

The Operation.

I have a few suggestions to make which may improve the standard of operative technique and the results. The suggestions are as follows: (i) In tonsillectomy, with regard to the patient's position — the sandbag, if any, should not be under the shoulders, but under the occiput. I use no sandbag; the head is fully extended at the occipito-atlantal joint. (ii) The gag, a Boyle-Davis type, should be suspended from the ceiling by a cord, thus holding the head and tongue in a constant position. One should use the largest possible blade and insert it along the hard palate. (iii) Some headlights are clumsy to wear or adjust and give a mere glimmer of light. Sloog's headlight is simple and effective and gives a clear view of the field. (iv) A tonsil dissector should have straight, blunt dissecting edges, large and small, at right angles to and at opposite ends of the shaft. (v) When a good pedicle is made, the operator should divide the tonsil with Eve's snare by placing the barrel on the pedicle against the tongue and drawing the wire up to it. The faucial and lingual tonsil are one structure, but with a good pedicle and the proper use of the snare, a minimum of lingual tonsil is left. (vi) Instruments used to display the plane of dissection are many, and include knives, scissors, toothed Waugh's forceps and a dissector, while dissection is done by knives, scissors, dissectors, gauze and a tonsillotome. The tonsillotome I do not recommend, although it is still used, but with consistent success by only one surgeon in a thousand. I see more failures from its use than from any other method of tonsillectomy. A good dissector will do the whole job; but sometimes scissors are needed to snip fibrous tissue. They are the only sharp instruments needed. Luc's forceps are the best for holding the tonsil.

In adenoidectomy, I recommend (i) preliminary finger dissection. Waldeyer's ring should be broken by finger dissection posterior to the Eustachian pillars. This leaves the adenoid mass standing in the middle with its sides free, whereupon it can be removed with a large, sharp Beckman's curette under heavy, continuous, unrelenting pressure. (ii) The adenoid bed should now be palpated and it should feel uniformly hard. One should remove remnants with the large curette by placing it behind the palate in the mid-line until its blunt edge touches the nasal septum, then sliding it to right or left as far as possible and repeating the first step. Small curettes are not needed and can be dangerous. The adenotome of La Force is a pathetic and ineffective device, and its use assumes that all fossæ of Rosenmüller have the same shape.

Bleeding persists after some operations and may be tonsillar or adenoidal. If tonsillar, it may be immediate or delayed. In the treatment of the immediate type, a pack is held in the fossa for four minutes; when it is

[1] Read at the North Queensland Medical Conference held at Rockhampton in July, 1960.

removed the venous bleeding has ceased and arterial bleeding can be seen. An open pair of artery forceps is pushed well in at the site of bleeding and, while still being pushed, it is closed. A mattress suture is then inserted with a Heath's needle. Large, clumsy needle holders obscure the view. The delayed bleeding is well treated, in cooperative patients, by giving an intravenous injection of morphine and by removing clots and holding adrenalin packs in the fossæ. In the case of non-cooperative patients, these are returned to the theatre and anæsthetized. The bleeding vessel is seized by a pair of artery forceps and ligated or stitched with a Heath's needle. The advice still appearing in textbooks, including one published in 1959, to sew the pillars together, is bad. The development of a hæmatoma inside the pillars or in the planes of the neck is certain, and if the bleeding does stop it would have stopped anyway. An efficient sucker is essential. The holes as supplied are too small and should be reamed to three-sixteenths of an inch.

Adenoidal bleeding is rare and can be dealt with by naso-pharyngeal packs.

Summary.

1. The operation of tonsillectomy and adenoidectomy is probably the operation most commonly done.

2. There is no agreement as to the indications for the operation.

3. There are circumstances in which the operation is of value.

4. The operation, when done, should be done with (i) an effective technique; (ii) suitable equipment; (iii) a minimum of trauma.

5. Some suggestions for improved surgical technique are offered.

CURRENT TRENDS IN THE MANAGEMENT OF THYROID DISEASE.[1]

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IT is my intention to deal briefly with several problems in thyroid disease, particularly as they present to the general practitioner, and to outline rational management in the light of current knowledge.

Simple Colloid Goitre.

Colloid goitre is a diffuse enlargement of the thyroid gland appearing usually during adolescence, but it may occur up to the age of 40 years, or even later. It is more common in females than in males. Although this is often a benign enlargement of the thyroid gland it poses three problems — those of diagnosis, treatment and prophylaxis.

The diagnosis is of great importance, since the diffuse enlargement of the thyroid gland must be differentiated from that of thyrotoxicosis, which will be discussed later. These glands are frequently unsightly, presenting a cosmetic problem as well as embarrassment in young women. Most colloid goitres can be satisfactorily treated with thyroid hormone. An average patient responds to a dosage of 3 grains of thyroid extract per day; this reduces the production of thyroid-stimulating hormone by the pituitary. The unstimulated gland slows down to a resting state, and consequently reduces in size. Therapy must be continued for a long period — in adolescents it must be continued until body growth has ceased, and in older patients it is necessary indefinitely in most instances. The dose of thyroid may be reduced to 1 grain per day after about six months. Iodine is of no value in the treatment of established colloid goitre. Iodine may shrink the gland a little, but usually it makes the gland harder, and does not appreciably reduce it in size.

In iodine-deficient areas the addition of a small quantity of iodine to the diet is an excellent prophylactic measure against the development of colloid goitre, but in areas in which ingested goitrogens are the cause of the disease, small doses of thyroid hormone may be necessary (Clements, 1957).

The Thyroid Nodule and its Management.

The single thyroid nodule has long been viewed as sinister (Lahey, 1951), but the clinical diagnosis of the true single nodule is far from easy; in our clinic 70% of glands diagnosed clinically as single nodules prove to be multinodular. It is well known that a significant number of clinically diffuse goitres are found to contain nodules, furthermore some clinically nodular goitres are found to be lobular. A nodule 1 cm. or more in diameter, even in a multinodular gland, or a nodule which is different from surrounding nodules, should be surgically excised.

Some thyroid cancers may decrease in size if treated with thyroid hormone, and, as Crile (1956) has shown, are as well treated in this manner as by excision, for if they decrease in size, it means the tumours are suppressible. If a nodule is clinically suspect the patient should be given a thyroid-suppression test; if there is no decrease in size in one month, thyroidectomy is advised.

In our clinic total lobectomy on the affected side with an isthmectomy is performed for the single nodule. We believe that in this way one minimizes the chance of cutting across tumour, and prevents possible spillage of malignant cells into the wound. A frozen section is made as a routine, and when the histological diagnosis is of a clearly malignant condition the remaining lobe of the thyroid is excised. However, if there is doubt as to the diagnosis, we await a paraffin section; if malignancy is then proven, further treatment is guided by the histological type of the tumour. For papillary carcinoma limited to the thyroid gland the patient is treated with thyroid hormone. In adenocarcinoma we used to use radioactive iodine in an attempt to destroy the remaining thyroid tissue, in conformity with world opinion. We now think this to be an inefficient way to deliver radiation to the tumour site, and use conventional deep X-ray therapy to achieve this purpose. When there is reason to believe that there are remote metastases which take up radioactive iodine and which are not accessible to direct radiation, ablation of these is attempted with ^{131}I. All patients are studied by ^{131}I uptake and thyroid scan prior to operation. Thyroid hormone is administered after operation to prevent the possible stimulation of any isolated hormone-dependent metastases by thyroid-stimulating hormone.

In patients with cervical lymph node metastases, radical neck dissection is carried out in continuity with total thyroidectomy; mediastinal lymph node clearance (McClintock *et alii*, 1954) is done at a second stage.

The Diagnosis of Thyrotoxicosis.

The classical features of thyrotoxicosis are a diffusely enlarged vascular thyroid gland and exophthalmos; however, more subtle forms with a nodular goitre, or even no goitre at all, are also seen. Symptoms may be numerous, but include weight loss in association with an increased food intake, awareness of cardiac action, cardiac arrhythmia, cardiac failure, visual and menstrual disturbances, heat intolerance, hyperkinetic activity with irritability and diarrhœa, weakness and asthenia.

On physical examination one usually finds warm, moist skin with evidence of peripheral vascular dilatation and tachycardia or even auricular fibrillation. An enlarged thyroid gland may be observed and a bruit may be heard over it. A fine tremor of the hands is sometimes present. Lid-lag, exophthalmos and ophthalmoplegia may be observed. A sign we have seen quite frequently in patients with thyrotoxicosis of long standing is observed in the

[1] Read at the North Queensland Medical Conference held in Rockhampton in July, 1960.

think it has value in diagnosis. The changes are trophic in nature and the condition is known as onycholysis. It finger nails, and although this is widely overlooked, we was first noted by H. S. Plummer, and was thought to be pathognomonic of thyrotoxicosis; this is not entirely correct, as it has been observed in patients with chronic arthritis and in fur workers (Luria and Asper, 1958). It consists of the irregular separation of the soft, cutaneous structures from beneath the surface of the nail, the nail-nail-bed junction develops a saw-tooth appearance, and as the nails are difficult to clean grime accumulates in these saw-teeth, producing an irregular black band under the nail.

FIGURE I.

Onycholysis in a patient with thyrotoxicosis. Note the separation of the nail from the nail plate and the saw-tooth effect.

In practice, and even more particularly in a thyroid clinic, the patient with an anxiety state and a goitre presents a problem in diagnosis. No absolute guides to diagnosis can be postulated; however, cold, moist hands are not associated with hyperthyroidism.

Patients are seen in our clinic only on referral from a physician (a general practitioner in most instances), and each patient brings with him a letter which contains the physician's clinical opinion. The patient is interviewed and examined in the clinic and the clinical diagnosis is recorded. After an interrogation to ensure that the patient has had no medication affecting the thyroid gland an ^{131}I uptake test is carried out. If the uptake value is high a thyroid suppression test is always undertaken; this is done with thyroxine or triiodothyronine, thyroxine being given in a dose of 0·1 mg. three times daily for a month, while triiodothyronine is given in a dosage of 40 to 50 μg. three times a day for one week. The body is thus provided with excess thyroid hormone, and this leads to pituitary suppression of thyroid-stimulating hormone elaboration in non-thyrotoxic patients. The attempt to suppress the thyroid gland in thyrotoxicosis will result in little or no significant fall in the uptake of ^{131}I. The final results of diagnosis show medical personnel to be correct in 60% of cases, while even specialists working full time in the clinic could score only 80% correct diagnoses; the ^{131}I uptake method is correct in 95% of instances.

The ^{131}I uptake method may necessitate two tests, but an absolute result is almost invariably obtained. The basal metabolic rate is no longer estimated in our clinic. It is a measure of body metabolism and not of thyroid function; low results are not obtained in hyperthyroidism, but high results do nothing to clarify the diagnosis. A leaking machine or a perforated tympanic membrane gives puzzling results.

Therapy in Thyrotoxicosis.

Thyrotoxicosis is of itself a severe metabolic disturbance, and the more rapidly this is controlled, the better for the patient. Whereas the disease may be well tolerated in a young person for a considerable time, in elderly patients severe cardiac damage may result from delay in initiation of therapy.

The methods of therapy are the administration of radioactive iodine, prolonged administration of antithyroid drugs or preparation with antithyroid drugs followed by thyroidectomy. Radioactive iodine administration is the safest method of therapy, there being no toxic reactions or surgical risk; however, the risks of genetic disturbances or carcinogenesis are not yet clarified, and so the use of the isotope is restricted to patients over 45 years of age, to younger patients with complicating medical disease whose life expectancy is less than 20 years, and to patients with recurrent thyrotoxicosis. In younger patients, thyroidectomy is preferred, or it may be advised to patients who live a long distance from the city and for whom frequent follow-up in the early weeks after ^{131}I therapy would be difficult.

In our clinic Oddie and his co-workers have developed new techniques to determine dosage with ^{131}I; these techniques have removed guesswork from this field and have cut the time for maximal therapeutic response in ^{131}I therapy considerably. A recurrence rate of less than 1%, and an occurrence rate for hypothyroidism of 4% are observed. The results of surgical treatment are 1% recurrence and 5% hypothyroid response. Radioactive iodine has made the treatment of thyrotoxicosis in the aged safe.

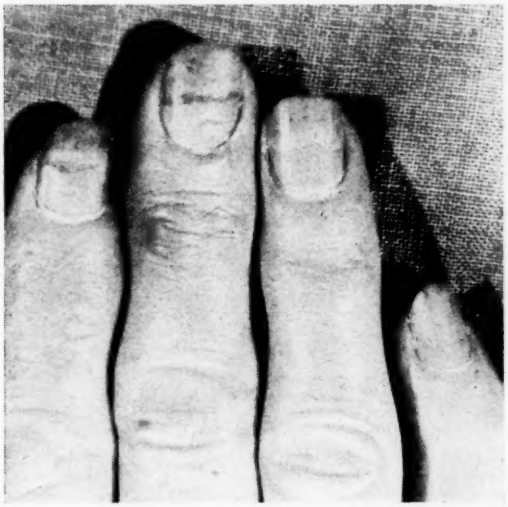

FIGURE II.

Onycholysis in a patient with thyrotoxicosis. Note that the separation of the nail extends almost down to the lunule.

It is most important to be sure of the diagnosis of thyrotoxicosis, for the empirical treatment of this disease has little to recommend it. For the practitioner away from the cities, there are several steps that can be undertaken to make an accurate diagnosis. Blood can be collected and sent to a special laboratory for protein-bound iodine estimation, or a 48-hour urinary ^{131}I output test can be arranged. A known dose of ^{131}I is administered by mouth and the urine is collected for the next 48 hours; the total urinary volume is measured and aliquots are sent for counting, the amount of the dose retained indicating the level of thyroid activity.

Antithyroid Drugs.

The antithyroid drugs have uses in the management of hyperthyroidism over and above their use in preparing patients for thyroidectomy. The general indications for their use are as follows: (i) hyperthyroidism in children and adolescents; (ii) hyperthyroidism in young adults

with small glands (that is, patients who are more likely to be rendered hypothyroid by thyroidectomy); (iii) hyperthyroidism in patients in younger age groups who refuse surgery or who have contraindications (medical and social); (iv) severe thyrotoxicosis; (v) hyperthyroidism during pregnancy — it is preferable to prepare the patients with these drugs and perform thyroidectomy in the first two trimesters, but medical treatment alone should be used during the last trimester. This form of therapy is not suitable for use in unreliable patients or those who have recurrent hyperthyroidism after previous use of antithyroid drugs. A daily dose of carbimazole (30 mg.), propylthiouracil (300 mg.) or methyl thiouracil (300 mg.) is usually used, and to obtain optimal results the medication must be taken every eight hours. Toxic reactions may occur with any of these drugs. When a reaction occurs with one drug another antithyroid drug can be used. Treatment must continue, in most cases, for at least a year. Permanent remission occurs in about 45% of cases.

The Use of Thyroid Hormone in Therapy.

The use of thyroid hormone in the treatment of colloid goitre, thyroiditis, secondary thyroid malignancy and thyroid insufficiency has been shown to be of value. On the other hand the use of thyroid hormone in the form of thyroid extract, thyroxine and the even more dangerous triiodothyronine in the treatment of the slightly obese, the languid and the halt has become widely practised in our community.

The wholesale swallowing of unnecessary drugs may in fact be damaging, for thyrotoxicosis factitia and cardiac irregularity have been observed in a number of elderly patients receiving relatively low doses of thyroid extract. Particular attention should be paid to patients whose requirements of thyroid extract are rising; this may be due either to old thyroid extract or to addiction to thyroid extract — no patient requires more than 4 grains of thyroid extract per day.

Selection of Patients for Thyroidectomy.

Patients are selected for thyroidectomy on the following indications: (i) thyrotoxicosis in patients between 20 and 45 years, unless contraindicated by complicating disease; (ii) the existence of a single thyroid nodule; (iii) respiratory obstruction; (iv) an enlarging thyroid gland; (v) a non-toxic enlargement of the thyroid, whether it be cosmetic, intrathoracic or malignant.

Diagnosis of Carcinoma of the Thyroid.

A diagnosis of thyroid carcinoma is based on the following criteria: (i) the presence of a nodular goitre, especially in children and young adults; (ii) a thyroid tumour exhibiting rapid growth; (iii) the simultaneous or successive appearance of a thyroid tumour and cervical lymph node enlargement; (iv) the recurrence of a thyroid tumour after thyroidectomy; (v) signs and symptoms, or the obvious presence of visceral, bone or lymph node metastases of unknown origin.

Summary.

1. Colloid goitre and its control by the administration of thyroid hormone has been demonstrated.

2. The management of the single thyroid nodule has been discussed.

3. The diagnosis of thyrotoxicosis is often difficult, and the relative diagnostic efficiency of specialists and general practitioners has been compared with laboratory methods, the superiority of the latter being demonstrated.

4. The choice of therapy in thyrotoxicosis has been outlined.

5. A method for investigation of thyrotoxicosis in rural areas is suggested.

6. It has been suggested that all patients be fully investigated before being treated as "subthyroid".

7. Indications for thyroidectomy have been discussed.

References.

CLEMENTS, F. W. (1957), "A Goitrogenic Factor in Milk", MED. J. AUST., 2: 645.

CRILE, G., JUN. (1955), "Treatment of Cancer of Thyroid with Desiccated Thyroid", *Cleveland Clin. Quart.*, 22: 161.

HALES, I. B., MYHILL, J., ODDIE, T. H., and CROYDON, M. (1961), "Quantitative Observations with the Triiodothyronine Suppression Test of Thyroid Function", *J. Clin. Endocrinol.*, 21: 189.

LAHEY, F. H., and HARE, H. E. (1951), "Malignancy in Adenomas of the Thyroid", *J. Amer. med. Ass.*, 145: 689.

LURIA, M. N., and ASPER, S. P. (1958), "Onycholysis in Hyperthyroidism", *Ann. intern. Med.*, 49: 102.

MORTENSEN, J. D., WOOLNER, L. B., and BENNETT, M. D. (1955), "Gross and Microscopic Findings in Clinically Normal Thyroid Glands", *J Clin. Endocr.*, 15: 1270.

MCCLINTOCK, J. C., STRANAHAN, A., ALLEY, R. D., and BAKER, W. A. (1954), "A Thoraco-Cervical Approach for Malignant Disease of the Thyroid Gland", *Ann. Surg.*, 139: 158.

ODDIE, T. H. (1957), "Outline of Early Radioiodine Uptake Tests for the Assay of Thyroid Function", MED. J. AUST., 2: 11.

ODDIE, T. H., RUNDLE, F. F., and MESCHAN, I. (1959), "The Use of a Test-Therapy Dose of Radio-Iodine for Thyrotoxicosis", *Int. J. Appl. Radiat.*, 5: 77.

ODDIE, T. H., RUNDLE, F. F., THOMAS, I. D., HALES, I. B., and CATT, B. (1960), "Quantitative Observations with the Thyroxine Suppression Test of Thyroid Function", *J. clin. Endocr.*, 20: 8.

THOUGHTS ON TREATMENT OF VENOUS ULCERS OF THE LEG.[1]

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THIS paper is not a learned discussion on the treatment of leg ulcers. It is rather an attempt to provoke thought and elicit discussion on a crippling ailment whose cure, in my opinion, on the whole has not been given adequate attention or even enough consideration as a worthwhile surgical achievement.

I first gave any serious attention to the ætiology and treatment of leg ulcers after performing a stripping of the long saphenous vein for a patient with a venous ulcer, only to find, to my horror and consternation, that not only did the ulcer not heal, but it gradually became worse. Soon afterwards another patient presented with an ulcer present for five years for which saphenous stripping and skin grafting had been performed 18 months previously in England, as a result of which the ulcer had not only recurred but had steadily deteriorated, and at no stage had it completely healed. These patients, both female, had spent about 30% of their time either in bed or in hospital over the preceding few years and were not capable of carrying out their normal housework.

A perusal of recent English and American literature did not throw much help on this problem, as nearly all authors commented on the poor long-term results after stripping of superficial veins, ligature of perforators and skin grafting of the ulcer. I read such reports as the following.

> Gradual ambulation followed complete healing of the graft in a number of cases, in others the ulcer recurred involving the skin adjacent to the graft edges (Julian).
>
> It has been reported that many of these grafts will stand up rather well, provided surgical removal and ligation of offending perforators is complete (Carl Davis, jun.).
>
> There are many patients who have had recurrent ulcerations throughout the years with a history of previous surgery but without good results.

Linton's and Bauer's results appeared to be more reasonable than others, and these authors stressed the ligation of the superficial femoral and popliteal veins respectively.

[1] Read at the North Queensland Medical Conference held at Rockhampton in July, 1960.

A further search of the literature revealed a book by P. Piulachs, Chief Professor Surgeon in the Faculty of Medicine of Barcelona, entitled "Ulcers of the Leg". This author propounds the theory that venous ulceration of the legs in nearly every case is preceded by valvular incompetency of both the saphenous and the deep vein systems. This incompetency of the valves allows the blows of the venous hydraulic ram due to effort to be transmitted to the region of the ankle joint and this leads to the development of ulcer. This occurs in both deep venous thrombosis and essential valvular incompetency without thrombosis.

In order to understand the problem, let us examine his reasoning.

The Action of the Vein Valves.

Anti-Gravitational Effect.

The normal individual when standing has the same orthostatic pressure in his lower limbs as the patient suffering from valvular incompetency in the same position. The hydrostatic pressure is overcome by *vis a tergo*, whether the valves are competent or not, and the blood flow is continuously towards the heart. In this position all the vein valves are open, whether they are competent or incompetent. Whenever there is valvular incompetency of the femoral vein, the pressure in the popliteal vein, without distal clamping, does not differ from that found in normal individuals in a position of 45° declivity. However, if the popliteal vein is clamped distal to the manometer, the position is quite changed. In the normal individual the pressure in 45° declivity is almost nil, whilst in the patient with valvular incompetency the pressure rises to 510-620 mm. of water. This is equivalent to the weight of a column of blood from the heart to the popliteal vein.

Abdominal Effort.

In contraction of abdominal muscles, pelvic veins are compressed and a venous hypertension occurs. In the normal individual this is not transmitted to the thigh because the valves close. In the patient with incompetent valves the pressure is transmitted to the whole venous system of the lower legs and the raised venous pressure is transmitted to the area around the ankle joint.

Muscular Role.

In the normal person the superficial network of the lower extremities is not supplied with blood from deep tissues during muscular contraction, owing to valves in the perforating venous channels. In the muscular relaxation stage, the superficial flow of blood empties into the deep system.

If the veins are incompetent — that is, the deep, superficial and perforating ones — the muscles no longer perform the action of a peripheral heart, and contractions force the blood in three directions: superficially, towards the heart and towards the peripheral regions. In the relaxation period the flow is in the reverse direction. This induces a see-saw movement instead of a movement towards the heart, *vis a tergo* persists and the final impulsive effect in the deep system is in the direction of the heart. In the superficial system the effects are more marked than in the deep system because the obstacles to its disposing of the venous blood are greater, and the subsequent venous stasis more intense. The obstacles are greater because the valvular incompetency of the deep system is added to the incompetency of the superficial system. The venous dilatations open up new valvular territories which up till then have been preserved and the condition must progress. That is to say, the valves (i) compel the venous flow of blood towards the heart during the contraction and relaxation of the leg muscles and (ii) neutralize the blows of sudden venous hypertension due to effort. With incompetent valves, the venous system (i) cannot impede the development of venous stasis and œdema and (ii) cannot deaden the retrograde rise of venous hypertension due to effort.

Evolution of Deep Venous Thrombosis to the Stage of Ulcer.

In the first stage, thrombosis occurs of a deep vein. Œdema is caused by deep hypertension distal to the occlusion, and is deep and persistent even during bed rest. Only when the occlusion is proximal to the saphenous veins may there be superficial in addition to deep œdema.

In the second stage there is a compensatory superficial venous collateral circulation after the development of the incompetent valves of perforating veins due to the stretching of the vein walls and thus the development of varicosities in the superficial system. In this stage there is superficial œdema which is not persistent. In the resting condition there is a compensation of circulatory conditions and œdema subsides at rest. No ulcer is present.

In the third stage, a deep, avalvulated column of blood is formed. In order that a venous ulcer may be developed, a deep avalvular column which we generally call a deep insufficiency must exist. There is an incompetency of the superficial system, either partial or total, which coexists with varices in all patients with a venous ulcer of the leg. There is a transmission of the hypertensive wave due to effort from the deep to the inefficient superficial system through the inefficient communicating valves and then the development of an ulcer.

The lymphatic factor is important in those cases of stubborn œdema which persists in spite of rest with the leg in an elevated position.

Pathological Changes in Capillaries and Venules.

Capillaries and venules are elongated, distended, coiled up, huddled and sinuous, and eventually these changes become irreversible. Capillaries burst and discharge red cells which originate pigmentation and fibrosis. The walls become thickened with thrombosis, and partial or total obstruction results. This leads to local venous stasis around the malleolar region, which produces local asphyxia and impairs the skin nutrition.

This local venous stasis produces a series of lesions due to asphyxia in the form of dermatitis, indurated cellulitis and finally ulceration.

The only factor which increases the venous pressure within the incompetent deep system as compared with an efficient deep system consists of an increase in the intraabdominal pressure with transmission of a hypertensive wave.

In all cases the existence of a deep valvular incompetence is a constant feature.

Types of Venous Insufficiency and Varices.

Five types of venous insufficiency and varices occur: (i) Varicosities may exist without incompetency of the valves at the sapheno-femoral junction. In these cases there is no venous ulcer, nor is there œdema. (ii) There may be single valvular incompetency of the upper saphenous valves, with valvular competency of the deep veins. This is not frequent. No venous ulcers occur in this type. (iii) Thrombosis of the deep system may occur prior to canalization. In these cases œdema is present. Ordinarily ulcers do not appear at this stage with maybe superficial varices. (iv) Post-thrombotic valvular insufficiency of the deep system may occur, superficial varicosities and incompetent perforating arteries are present, and an ulcer may develop. (v) There may be non-thrombotic valvular incompetency. Superficial varicosities are present and incompetent perforating veins, while ulcers may develop.

Manometric and phlebographic tests may be employed for estimating the deep insufficiency.

Treatment.

Treatment should be directed at the ulcer first. Extirpation of the ulcer and skin grafting may be used. One should next turn to the treatment of the superficial

TABLE I.
Details of Present Series.

Case Number.	Sex.	Age (Years).	Size and Duration of Ulcer.	Ætiology.	Previous Operative Procedure.	Operative Procedure.	Follow-Up Time.	Result.
I	F.	39	Size of shilling, 4·5 years.	Trauma.	Stripping of saphenous veins 27/2/59.			Ulcer broke down after three weeks.
						28/8/59: Ligation and cutting of popliteal vein.		Healed in hospital, but broke down in three months.
						12/4/60: Excision and grafting.	3 months.	Healed.
II	F.	37	2"×1", 3 months.	——	——	14/9/59: Severance of popliteal vein. Stripping of long saphenous vein. Excision and skin grafting of ulcer.	10 months.	Healed.
III	F.	55	Swelling, pigmented, thrombotic areas, both legs, 10 years.	——	——	21/10/59: Severance of popliteal vein. Stripping of saphenous system, both sides, two sittings.	9 months.	Healed.
IV	F.	43	Severe varicose eczema. Ulcer 1" diameter, 13 years.	Deep thrombosis.	——	28/10/59: Severance of popliteal vein. Stripping of saphenous system.	9 months.	Healed, no irritation, no eczema.
V	F.	45	2" diameter, severe œdema, 5 years.	——	Stripping of veins 18 months previously in England.			
						4/1/60: Ligation of popliteal vein.		Healed for 1 month.
						13/3/60: Excision and skin graft. Only 75% take.	6 months.	Healed in hospital. Broke down 1 month. Still has pain, swelling and partial healing. Skin graft not broken down.
VI	M.	57	Ulcer 3"×2¼". Lower leg grossly swollen and permanent. Pigmentation 3+, 13 years.	——	Ligation of veins, 1949. Ligation of veins, 1953.			No healing.
								Never completely healed.
						19/1/60: Stripping of saphenous. Severance of popliteal vein.	6 months.	Healed. Œdema and pigmentation unchanged.
VII	M.	55	Size 1"×1". Induration and pigmentation 2+, 6 years.	Congenital varicose veins at age of 16 years.	——	15/1/60: Severance of popliteal vein. Stripping of saphenous system. Multiple excision of varices.	6 months.	Healed.
VIII	F.	43	Varicose veins for 15 years. Ulcer for 5 years.	Deep thrombosis.		10/3/60: Severance of popliteal vein. Stripping of saphenous system.	5 months.	Healed.
IX	F.	48	1"×1", 4 years.	——	——	19/4/60: Severance of popliteal vein. Stripping of saphenous system.	3 months.	Healed.

varices, which involves stripping and removal of the local varices. The next step is the treatment of the deep insufficiency, which involves (i) interruption of the superficial femoral vein and/or (ii) interruption of the popliteal vein.

Results.

Piulach treated 72 ulcers, of which 49 were post-phlebitic and 23 were essential varicosities. He cured 68 — that is, 94%. He had four recurrences between one and five years.

Bauer claims 75% good results of politeal vein ligation.

As a corollary of this subject, it is interesting to compare the subsequent history of patients with thrombosis of the deep venous system under two headings: (i) no operative interference; (ii) interruption of the deep venous system.

> The patient who has had inadequately treated single or recurring episodes of thrombophlebitis of the legs eventually finds himself with a limb that is chronically swollen, painful, discoloured and after a period of time ulcerated. There is brawny induration of the skin and the subcutaneous tissues are fibrotic. The deep veins of such legs are usually dilated, the walls thickened and the valves completely incompetent (Olivin).

Interruption of Deep Venous System.

Linton and Hardy, of the Massachusetts General Hospital, performed interruption of the superficial femoral vein in 1692 patients who had either thromboses or embolisms and the total number of ligations was 3185. There were no complications in spite of the great number of ligations. The follow-up of these cases did not reveal the development of sequelæ in the great majority of cases, although DeTakats states that in some cases ulcer, œdema or varicosities may appear.

Allen has studied the records of a group of patients one or two years after ligation of the femoral vein. He has found the number of complications is very much reduced, as they appeared after only 5% of the therapeutic ligations.

In a case of Bauer's, important sequelæ appeared 10 years after the ligation of the femoral vein as treatment of an acute thrombosis. The patient was found to have a canalization of the femoral thrombosis and the vein was incompetent. The interruption of the deep flow of blood was annulled by a series of newly-developed, middle-sized veins which spanned the ligature. There is no doubt in this case that the development of sequelæ was not dependent upon the ligation, but upon the newly-formed veins which allowed the waves of venous hypertension to be transmitted backwards through them.

All this lends support to Piulach's theory that the development of deep venous insufficiency is the cause of the ulceration. In thrombosis this may be due to recanalization of the thrombosis or the development of large, unvalved veins spanning the block.

Results of Present Series.

Having studied these results, but being somewhat dubious of their veracity owing to the paucity of reports

from the English-speaking world, I decided to go half-way along the path and adopt Bauer's method of treatment—that is, ligation of the popliteal vein, stripping of the incompetent saphenous system and skin grafting of the ulcer if this proved necessary. These results are now presented, and seem promising, although the follow-up time is not of sufficient length to gauge the possibilities of recurrences.

Clinically, the ulcers have healed rapidly and all but the largest have healed in hospital within two weeks without post-operative bed rest. Admittedly all ulcers will heal if given sufficient bed rest and elevation of the leg, but these patients were out of bed in 24 hours and walking in 48 hours if skin grafting had not been performed.

The initial cure rate was seven out of nine—that is, 77%, and to this reference will be made later. All healed ulcers have remained healed in spite of normal patient activity which had not been previously possible. One patient is a manager of a store and on his feet all day, whilst another was enabled to carry through an intensive election campaign which involved much activity on his legs with a successful conclusion of his campaign and his ulcer still healed. Both of these patients had thickened long saphenous veins with small lumens, which presented great difficulty in the passage of the stripper and necessitated removing the vein in four or five lengths. One had had a high ligation and one no previous surgery. These veins were, in my opinion, recanalized thrombosed veins and completely incompetent, although not varicose.

We will now consider the cases in which previous surgery had no effect in healing the ulcer. Two patients had stripping of saphenous veins (Cases I and V) with no improvement whatsoever to their ulcers, either temporary or permanent. One (Case VI) had two ligations of his saphenous system, both with only minor and temporary improvement. The last patient states that his leg is better than it has been for many years and the period of present healing (six months) is the longest period for 11 years when his ulcer has been healed, enabling him to perform his normal work continuously.

The history of Case I is a story of inefficient and insufficient surgical procedures. Stripping of the patient's saphenous veins had no effect on the ulcers, and ligation of her popliteal vein later produced temporary improvement only. Excision and grafting of her ulcers has healed the ulcers, but I am convinced that these will break down some time in the future. She has not been included in the 77% of healed ulcer patients.

In Case V the ulcer has not healed with ligation of the saphenous system, popliteal vein ligation and excision and grafting of the ulcer. I am convinced that in both of these cases there still exists an incompetency of the deep system producing the intermittent venous hypertension of effort which is the continuing cause of the ulcer, and that ligation of the superficial femoral vein would be needed to cure these patients.

In the first of these three cases interruption of the saphenous system had no effect, but interruption of the popliteal vein cut the vicious circle and enabled the ulcer to heal.

Although my numbers are very small it is interesting to consider Bauer's results with 75% cure with similar methods. Flores has another interesting series. Three patients with venous ulcers were treated by superficial femoral vein ligation with three recurrences. He treated eight patients by popliteal vein ligation with six recurrences. Employing Piulach's method of spaced ligation under manometric control he treated 83 patients, including the nine with recurrences already mentioned, and observed no further recurrence. Flores states:

> Up to the present moment Piulach's technique is the best of those reported because of its sound physiopathological basis and the results it affords.

I am convinced from this small series and from the reports in the literature that this is so, and I intend in the future to carry out this method.

INJURIES TO THE ELBOW IN CHILDREN.[1]

By G. J. DOUGLAS, M.B., B.S., F.R.A.C.S.,
Townsville.

INJURIES about the elbow joint fall very naturally into two groups—those which occur in the child and those which occur in the adult. This is due in part to the differing types of trauma to which each is exposed and in part is related to the presence of a number of epiphyses around the elbow. The child is injured in falls of various sorts—from trees, horses, swings and so on—and, of course, elbow injuries are commoner in boys than in girls. The adult, on the other hand, is injured mainly in industrial and motor accidents—his injuries are more severe and often compound and usually require operative treatment.

In the diagnosis of fractures of childhood, it is essential to have a thorough knowledge of the normal radiographic anatomy. The capitellum epiphysis is the first to appear at the age of 2 to 3 years. Next we see the medial epicondyle at the age of 5 years, followed a little later, at the age of 7 years, by the upper end of the radius. The medial half of the trochlea does not appear until the age of 11 or 12 years, at about the same time as the epiphysis of the olecranon. The last epiphysis to appear is the lateral epicondyle, at about the age of 12 years.

By far the commonest fracture in children is the supracondylar fracture. Two types of fracture occur: the so-called flexion and extension types. The former is very rare, but must be watched for, as it needs to be treated in extension rather than flexion. The extension type of injury is due to a fall on the outstretched arm, with the elbow hyperextended. The commonest form of this injury is the fracture without displacement. This needs no more than immobilization in a sling for about three weeks. In a complete fracture the lower fragment is displaced posteriorly, and in some cases the displacement will be so extreme as to mimic clinically a dislocated elbow. The fracture is oblique downwards and forwards, so that a prominent spike is left on the upper humeral fragment, which may traumatize vessels and nerves. As well as being displaced backwards, the lower fragment is usually displaced laterally and may be rotated medially.

In the reduction of this fracture the latter displacement must be corrected first—by traction applied to the extended arm with lateral rotation of the forearm into supination and direct pressure applied to the lower fragment. Then the posterior displacement can be corrected by traction while the arm is bent into the flexed position, and direct pressure is applied forward on the lower fragment. The position should be checked radiologically at once, while the child is still anæsthetized, and remanipulation carried out if necessary. A delay of even 24 hours makes a second manipulation very difficult.

The position is maintained by flexion of the elbow, the degree of flexion being determined by the pulsation of the radial artery. In the majority of cases all the fixation that is required is a collar-and-cuff sling, the weight of the elbow hanging down maintaining the reduction. Because of the constant danger of vascular embarrassment the only indication I can see for using plaster is instability of the fracture in the lateral plane, and then a well-padded posterior slab should be applied to prevent lateral displacement. The cubital fossa should be left free and a complete plaster should never be used. Likewise the use of adhesive strapping around the elbow is dangerous.

The great complication of this fracture is ischæmia of the forearm, and it occurs to a greater or lesser degree in as many as 20% of such fractures. The warning signs are absence of the radial pulse, pallor of the fingers, pain in the forearm and paralysis of the fingers, and these signs must be constantly sought. If there is any evidence of circulatory embarrassment, the flexion of the elbow

[1] Read at the North Queensland Medical Conference held at Rockhampton in July, 1960.

should be reduced to about a right angle. If there is still no improvement all splinting is removed and the arm is straightened another 20 to 30 degrees. Satisfactory position of the fragments and elevation of the forearm can be maintained by traction. However, if loss of position occurs it does not matter, as the disability which will result from this is insignificant compared with the tragic effects of prolonged ischæmia. If there is still no relief the cubital fossa must be explored without delay, as temporizing, for even three or four hours, will allow irreversible changes to take place. The fascia over the forearm muscles is divided to allow extrusion of the œdematous muscle. The brachial artery is sought, and if damaged or in spasm, is resected to relieve the spasm of the collateral circulation.

Nerve injury is also fairly common—the radial, ulnar and median nerves being involved either together or separately. The lesions should be sought and recognized before reduction; but as a rule the lesion is due to contusion only and requires no treatment other than splinting when necessary, and recovers rapidly.

The fracture should be maintained in flexion for three weeks, after which the sling may be dropped to a right angle and in another week or two discarded. The child is then allowed to use the arm and no attempt at passive stretching must be counselled, as this will invite stiffening of the elbow. Carrying heavy weights or swinging from overhead bars is taboo. Physiotherapy is unnecessary.

In the majority of cases, when good reduction has been obtained, full return of function can be anticipated, but in those in which the fracture was severe or required repeated manipulations slight loss of extension may persist. Before we leave this worrying fracture there are two other problems that are met: the fracture that one is unable to reduce by manipulation and the fracture first treated several days after injury. The choice usually lies between leaving the fracture as it is, or doing an open reduction, although in some cases the position may be improved by traction. It is common experience that anatomical reduction gained by operation often leads to permanent restriction of elbow movement; but if one decides to leave the fracture as it is, one must be satisfied that there is no angular or rotational deformity.

Quite severe degrees of posterior and lateral displacement are acceptable. Remodelling of the bone with growth will correct such displacement, but angular and rotational deformities will persist and lead to such ugly end-results as cubitus varus. However, even in such end-results the range of elbow movement is usually good and the deformity can be corrected at a later age by osteotomy. The fracture encountered several days after the injury is always worth manipulating, as often reduction is still possible. If not, one treats them as outlined previously.

The next injury to be considered is a fracture of the lateral condyle, which is brought about by hyperextension plus abduction of the elbow. The fracture extends from the lateral epicondyle downwards and medially through the trochlea. The fractured fragment is much larger than it appears on the X-ray film, where the main shadow is the displaced capitellum epiphysis, to which is usually attached a flake of diaphyseal bone. In young children the radiological diagnosis can be very difficult because of the presence of a large amount of cartilage in the epiphysis, and if one is in doubt, one should take an X-ray picture of the other elbow in a symmetrical position. The fracture may be a crack only, there may be minor displacement or there may be gross displacement with rotation of the fragment outwards and forwards, the displacement being maintained by the attached extensor muscles. In the first type, a firm compression bandage and a collar-and-cuff sling should be used with the usual precautions as to circulation of the forearm.

Radiographs should be taken twice in the first week to check on late displacement, as the pull on the extensor muscles is strong and the tendency to non-union great.

Immobilization should be continued until union is radiologically present. In either of the other two types, open reduction and screw- or wire-fixation through the diaphyseal fragment is indicated. The fracture must be accurately fitted back to its bed and dissection of the extensor muscles from the fractured fragment avoided, as this is the fragment's source of blood supply. Immobilization is continued until union is present.

In the case of non-union, if this is detected within three months of the occurrence of the fracture, an open reduction is performed and a hole is drilled through the diaphyseal fragment into the humerus, the hole being packed with bone chips. If non-union is detected later it is probably better to wait. Non-union is initially compatible with normal function, but owing to the failure of growth of the lateral condyle a cubitus valgus deformity will result, with delayed ulnar palsy after 15 or 20 years. Thus when growth is complete the loose fragment should be excised and an osteotomy performed to correct the deformity. In this fracture the results of early open reduction are eminently satisfactory and the danger of non-union with closed reduction is very real.

Fractures of the medial epicondyle are about as common as those of the lateral condyle. They are due to abduction strain. Although the fragment is an epiphysis, it takes no part in longitudinal growth, so the injury and its after-effects are much less severe.

Here again three degrees of separation are recognized: (i) minimal separation of no more than a few millimetres, in which the flexor origin is intact; (ii) displacements greater than 5 mm.; (iii) inclusion of the fragment in the elbow joint. Operative treatment is, as a rule, unnecessary in the first two degrees of separation, for even if bony union fails to occur there is a strong fibrous attachment and function of the elbow returns to normal, and no serious late sequelæ are to be expected. The two indications for operation are the presence of the fragment in the joint and evidence of damage to the ulnar nerve. The fragment is fitted back to its bed and secured with chromic catgut or a fine wire. At the same time the ulnar nerve is examined and transplanted forward if necessary.

Fracture of the neck of the radius is the childhood counterpart of fracture of the head of the radius in the adult. They are both produced by the same compression-abduction force at the elbow. The fracture may run through the epiphyseal line with the usual triangular fragment of diaphysis attached, or it may run through the neck of the radius.

The epiphyseal fragment is displaced laterally and forwards and tilted outwards, and the amount of tilting determines the treatment. If it is less than 30° the fracture may be left. If the tilting is no greater than 60° then manipulation may be carried out. The extended arm is adducted at the elbow and one pushes the fragment firmly back with the thumb. Operative reduction is carried out for fractures of greater severity, or those in which manipulation fails. The head is put back in position under vision, and once reseated needs no further fixation. On no account must the head of the radius be removed in a child as it will lead eventually to gross deformity and weakness of the elbow.

Dislocation of the elbow occurs at all ages. In children it commonly occurs without fracture, but it may be associated with fracture of the epicondyle or radius. If it is encountered early, reduction by traction in the position in which the elbow lies is usually straightforward. Immobilization in a collar-and-cuff sling should be continued for three weeks to allow soft-tissue healing, and then active exercise only permitted. The immediate and later complications are similar to those experienced in supracondylar fractures and are treated accordingly. If a dislocated elbow is first treated a week or two after the injury, open reduction may be necessary.

Dislocation of the radial head forward can occur rarely and be easily missed if the X-ray film is not examined carefully. Mainpulative reduction should be carried out. It may be associated with fractures of the shaft of the ulna (Monteggia) or the olecranon. If the diagnosis is

made late it is better to leave things as they are and proceed to remove the head of the radius when growth is complete.

Another curious, but rare, injury to the elbow is the so-called "pulled elbow", which occurs in children between the ages of two and six years. At this age the head of the radius is of the same diameter as the neck, and so it is possible for the head to be pulled through the annular ligament by a parent lifting the child up by one arm as is often done when helping a child up a step. The elbow is extremely painful and is fixed in mid-pronation. There is resistance to all movements and X-ray films are non-contributory. The clues to the diagnosis are the severe pain and the limited degree of supination. The condition is treated by securing relaxation and then giving the forearm a deft twist into supination; an audible click is produced as the ligament slips back into position.

There are two thoughts with which I would leave you: in general, one should be conservative in the treatment of fractures about the elbow in children, but when surgery is indicated, as in a fracture of the lateral condyle and severe fractures of the medial epicondyle and the neck of the radius, it must be done early. There is no place for the "Let's see how it goes" attitude. The other reminder is that the treatment after removal of splinting is all-important if stiffness of the elbow is to be minimized. Passive stretching or massage in any form should never be countenanced.

Reports of Cases.

HÆMOPERICARDIUM COMPLICATING ANTI-COAGULANT THERAPY.

By JOHN TZINIOLIS, M.D.,
Liverpool District Hospital, New South Wales.

ANTICOAGULANT THERAPY in myocardial infarction has now been used for so many years that nearly complete agreement seems to exist about the indications, at least as far as short-term therapy is concerned.

The estimation of the prothrombin index has contributed greatly to minimizing the danger of hæmorrhage, and this complication is now comparatively rare. However, it happens occasionally that patients with acute myocardial infarction die of heart tamponade due to hæmopericardium.

The commonest cause of hæmopericardium is rupture of the myocardium, but in some instances it may be a hæmorrhagic pericarditis. A case of hæmopericardium following anticoagulant therapy occurred in this hospital last year. Although such cases are comparatively rare, the seriousness of the complication, and in this case the particular severity of the tamponade and the dramatic recovery following pericardial paracentesis, warrant publication of the case history and discussion.

Clinical Record.

The patient, a man, aged 48 years, was admitted to the hospital for the first time on March 3, 1960. He had a past history of right nephrectomy due to nephrolithiasis and hydronephrosis six years before. The present illness started suddenly at work whilst he was lifting a heavy weight; he experienced severe retrosternal pain with classical radiation to the neck, shoulder and left arm.

There were no other symptoms. On examination the patient was of stated age and health, and in obvious pain. No dyspnœa, cyanosis or peripheral shock was detected. However, there was profuse skin action.

The radial pulse rate was 78 per minute, regular in time and amplitude. In the peripheral pulses no abnormality was detected. The blood pressure was 130/80 mm. of mercury, and the jugular venous pressure was not elevated.

The apex beat was three and a half inches from the mid-sternal line in the fifth left intercostal space. It was left ventricular in type; there were no thrills or shocks, nor was there a ventricular heave.

Two heart sounds could be heard at all areas, physiological in character but more pronounced than normal. No murmurs were heard. There were occasional ectopic

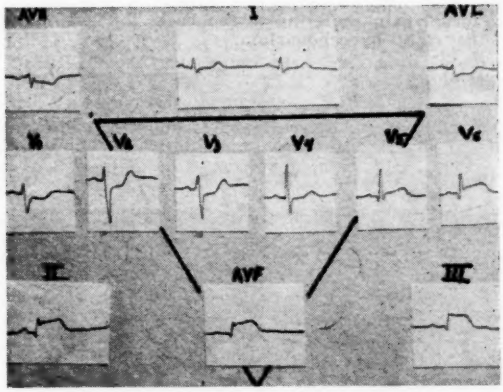

FIGURE I.
The electrocardiogram on admission (March 3, 1960) confirmed the recent posterior myocardial infarction.

beats. Crepitations were heard at the base of the right lung; there was no dependent œdema, and the liver was not palpable. There were no abnormal clinical findings in the other systems.

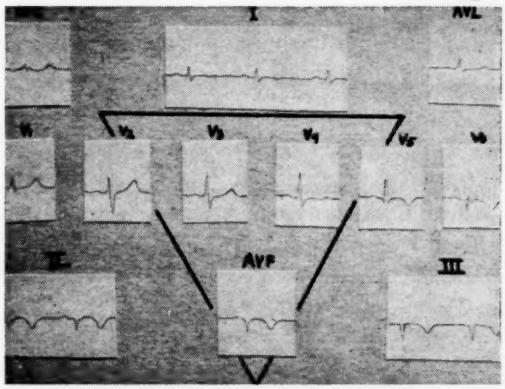

FIGURE II.
The electrocardiogram at the time the patient was about to be discharged from hospital (March 24, 1960) showed the healing phase of a posterior myocardial infarction.

The erythrocyte sedimentation rate was 8 mm. after one hour (Westergren); the hæmoglobin value was 14 grammes per 100 ml.; the white cells numbered 13,000 per cubic millimetre, with 82% polymorphs. Microscopic examination of the urine revealed four red cells per high-power field and two cellular casts.

On admission, the electrocardiogram (Figure I), showed definite *ST* segment elevation in leads II, III, VF, V5 and V6 and *ST* segment depression in leads VR, VL, V1, V2 and V3. The diagnosis was made of recent posterior myocardial infarction.

Routine treatment with morphine and anticoagulants (heparin and phenindione) was commenced. The prothrombin index was maintained at 20% to 40% (Quick).

On the second day after admission to hospital the patient developed triple rhythm and a gross pericardial friction rub. Digoxin (0·25 mg. twice daily) was given, and this condition disappeared after seven days. The patient's condition continued to improve and a progress electrocardiogram (Figure II) showed the healing phase of a posterior myocardial infarction. On March 24, 1960, the patient was allowed up and remained well until March 30, when he suffered a further severe attack of retrosternal pain radiating to the back, the left shoulder and the right hypochondrium.

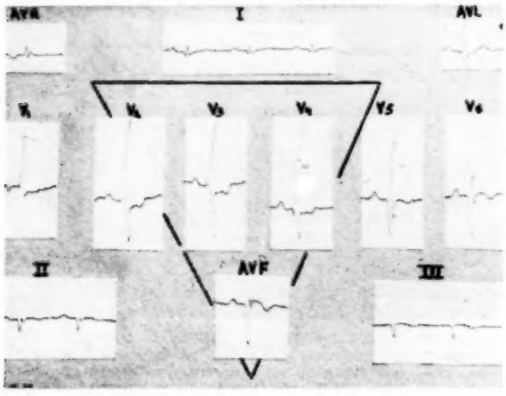

FIGURE III.
The electrocardiogram a few days after the second attack of cardiac tamponade (April 30, 1960).

The patient became pale and cold, with profuse skin action and the blood pressure fell to 75/50 mm. of mercury. Similar attacks occurred repeatedly over the next three days. At this time the prothrombin index was

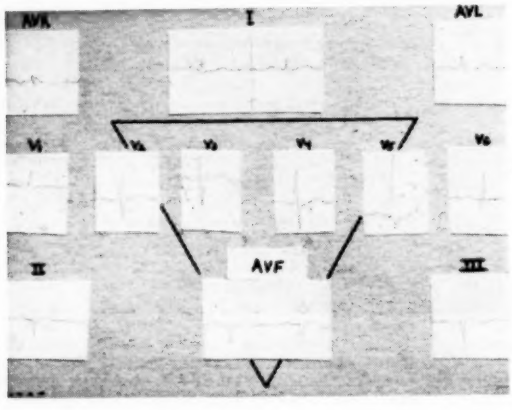

FIGURE IV.
The electrocardiogram a few months after complete recovery from the cardiac tamponade (August 1, 1960).

19% (Quick), and there was no change in the electrocardiogram, but an X-ray film of the chest (Figure V) showed a grossly enlarged cardiac shadow owing to pericardial effusion. Phenindione therapy was suspended and vitamin K_1 administration was commenced, but despite this the patient suffered a melæna stool.

His condition deteriorated rapidly; the blood pressure was absent, there were engorgement of the jugular veins, faint pulse and heart sounds and dullness at the bases of both lungs. Morphine was administered and a noradrenaline intravenous infusion was commenced.

A paracentesis of the pericardial cavity was performed, and 200 ml. of pure blood was obtained, Hydrocortisone (50 mg.) was injected into the pericardial cavity, and a blood transfusion (500 ml.) was given.

The result of the pericardial paracentesis was dramatic. The retrosternal pain and the jugular venous engorgement disappeared, and the blood pressure, colour and temperature became normal. At the same time a diagnostic paracentesis of both pleural cavities also revealed pure blood.

FIGURE V.
A portable X-ray film of the chest taken on the day the clinical picture of tamponade developed (April 4, 1960).

The patient's condition after the paracentesis was good until two days later, when he again developed symptoms and signs of cardiac tamponade. A further electrocardiogram (Figure III) revealed a right heart strain pattern, and was considered to be consistent with pericardial effusion. An X-ray film of the chest confirmed that effusion was still present.

A second pericardial paracentesis was performed, and 400 ml. of pure blood were extracted. Hydrocortisone (100 mg.) was injected into the pericardial cavity. The clinical picture of the cardiac tamponade immediately disappeared, as before.

Ten days later, because of severe pain at the base of the left lung and in the left hypochondrium a further chest X-ray film was taken (Figure VI), and this indicated the presence of a bilateral pleural effusion. A paracentesis of the left pleural cavity was performed and 150 ml. of blood-stained fluid were obtained. Hydrocortisone (100 mg.) was injected intrapleurally.

Four days later, because of the recurrence of left-sided chest pain, 800 ml. of faintly blood-stained fluid was withdrawn, and 100 mg. of hydrocortisone were again injected.

The patient's condition improved progressively until no symptoms and signs could be detected, and he left hospital 66 days after his admission, the chest X-ray film (Figure VII) being normal, and an electrocardiogram (Figure IV) showing the healing phase of a posterior myocardial infarction.

The patient has been regularly followed up in the outpatient clinic of the hospital, and still remains very well, apart from occasional palpitations. He returned to light duties eight months after the onset of his illness.

Discussion.

Wright and associates in 1954 reported that among two groups of patients treated and untreated with anti-

coagulants, 4·1% of 589 treated and 2·4% of 442 untreated patients died from heart rupture or hæmopericardium.

Waldron and associates in 1954 found 79 cases of hæmopericardium among 545 patients who came to autopsy after dying from acute myocardial infarction. There was a threefold increase of the incidence of hæmopericardium in the anticoagulant treated group as compared with the untreated group.

Lang and Aarseth in 1958 reported that among 1044 patients who came to autopsy after myocardial infarction, 69 patients received effective anticoagulant therapy. These

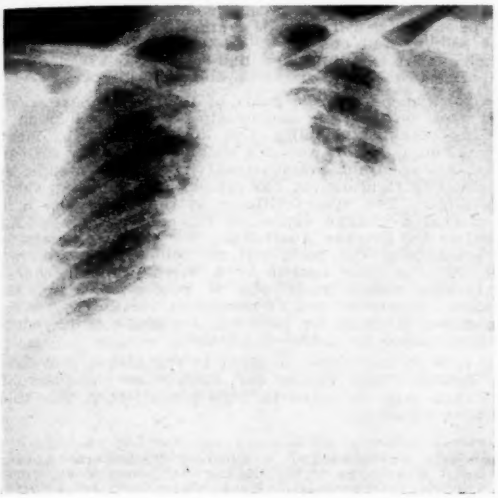

FIGURE VI.

An X-ray film of the chest taken at the time the acute attack of left chest pain developed. A bilateral pleural effusion is present (April 20, 1960).

were compared with a group of 72 control patients without anticoagulant therapy. They say that the incidence of hæmopericardium (one case) or cardiac rupture (14 cases) in the treated group was about twice as large as in the control group (only eight cases of cardiac rupture).

Lang and Aarseth, also in 1958, reported that among 89 patients with hæmopericardium who came to autopsy, 81 had myocardial rupture and three had rupture of the aorta. In the remaining five cases a localized cause could not be demonstrated. Among these 89 cases there were eight with an excessive anticoagulant effect shortly before death. In addition there were at least two patients who had an excessive anticoagulant effect at an earlier stage of treatment. They expressed the conclusion that anticoagulant therapy increases the risk of hæmopericardium with or without cardiac rupture, largely because of an overdose of anticoagulants, and that hæmopericardium without rupture occurred in the anticoagulant-treated group.

It seems obvious from these reviews that anticoagulant therapy definitely increases the risk of hæmopericardium in myocardial infarction. This does not alter the fact, of course, that in most series the over-all mortality is much lower in the treated groups. Ours was no more than a routine case of myocardial infarction with the patient about to be discharged from hospital when this catastrophe overtook him.

In retrospect what caused this hæmopericardium? Firstly, was this a case of acute benign pericarditis originally, in which case anticoagulant therapy would have been contraindicated? We feel that the original tracing (Figure I) completely rules out this possibility.

Secondly, was this man suffering from an overdosage of phenindione? According to the literature there is no specific prothrombin level below 50% at which bleeding may commence, and this level appears to be under the influence of individual factors in a particular patient, the nature of which is still unknown. Certainly here the prothrombin index was only 19% at the time of hæmorrhage and this may well have played a major part.

However, the third factor is that this patient had a gross pericardial friction rub which persisted for seven days and which we felt to be rather unusual. We wonder whether, with the same anticoagulant therapy, this patient would have sustained a hæmopericardium had not the pericarditis (from underlying infarction) been so severe.

Summary.

A case has been presented of severe cardiac tamponade from hæmopericardium in a patient with myocardial infarction treated with anticoagulants. It is suggested that overdosage of phenindione was the cause, but the interesting feature of gross pericardial friction rub is discussed.

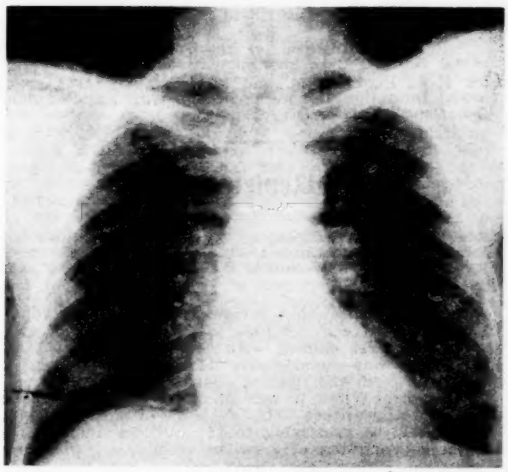

FIGURE VII.

An X-ray film of the chest taken after the patient's complete recovery (May 17, 1960).

Acknowledgements.

I am grateful to the honorary physician, Dr. W. Murphy, for allowing me to manage this case under his supervision, and for his helpful advice in the preparation of this paper, and to the medical superintendent of the Liverpool District Hospital, Dr. M. Cram, for his permission to publish the case.

I would also like to thank the nursing and technical staff of the hospital for their help.

References.

CECIL, R. L., and LOEB, L. F. (1957), "A Textbook of Medicine", Ninth Edition, Saunders, Philadelphia and London: 1271.

CECIL, R. L., and LOEB, L. F. (1957), "A Textbook of Medicine", Ninth Edition, Saunders, Philadelphia and London: 1340.

FRIEDBERG, C. K. (1957), "Diseases of the Heart", Second Edition, Saunders, Philadelphia and London: 593.

GOLDMAN, M. J. (1960), "Principles of Clinical Electrocardiography", Third Edition, Lange Medical Publications, Los Altos: 260.

HOWELL, D., and KYSER, F. A. (1954), "The Effect of Anticoagulant Therapy Upon the Development of Mural Thrombosis following Myocardial Infarction", *Ann. intern. Med.*, 40: 694.

JELTER, W. W., and WHITE, P. D. (1944), "Rupture of the Heart in Patients in Mental Institutions", *Ann. intern. Med.*, 21: 783.

LANG, H. F., and AARSETH, S. (1958), "The Influence of Anticoagulant Therapy on the Occurrence of Cardiac Rupture and Hæmopericardium", *Amer. Heart J.*, 56: 257.

LANG, H. F., and AARSETH, S. (1958), "The Influence of Anticoagulant Therapy on the Occurrence of Cardiac Rupture and Hæmopericardium following Heart Infarction. A Study of 89 Cases of Hæmopericardium", *Amer. Heart J.*, 56: 250.

LIAN, C., and COBLENTZ, B. (1956), *"Guide d'électrocardiographie", Deuxième édition*, Masson et Cie, Paris: 96.

MAHER, J. F., MALLORY, K., and LAURENZ, G. A. (1956), "Rupture of the Heart after Myocardial Infarction", *New Engl. J. Med.*, 255: 1.

MCQUAY, N. W., EDWARDS, J. E., and BURCHELL, H. B. (1955), "Types of Death in Myocardial Infarction", *Arch. intern. Med.*, 96: 1.

OBLATH, R. W., LEVINSON, D. C., and GRIFFITH, G. C. (1952), "Factors Influencing Rupture of the Heart after Myocardial Infarction", *J. Amer. med. Ass.*, 149: 1276.

OKAFOR, E. E. (1960), "Hæmopericardium During Anticoagulant Therapy", *Brit. med. J.*, 2: 1159.

VASILIOU, D. (1956), "Diagnostic Methodology and Differential Diagnosis", First Edition, Kovanis Medical Publications, Athens.

WALDRON, B. R., FENNELL, R. H., CASTLEMAN, B., and BLAND, E. F. (1954), "Myocardial Rupture and Hæmopericardium Associated with Anticoagulant Therapy", *New Engl. J. Med.*, 251: 892.

WOOD, P. (1956), "Diseases of the Heart and Circulation", Second Edition, Eyre and Spottiswoode, London: 658.

WRIGHT, I. S., BECK, D. F., and MARLE, C. D. (1954), "Myocardial Infarction and its Treatment with Anticoagulants", *Mod. Conc. cardiov. Dis.*, 23: 208.

Reviews.

A Guide to Blood Transfusion. By R. J. Walsh and H. K. Ward; second edition; 1960. Sydney: Australian Red Cross Society (New South Wales Division). 8¼" × 5¼", pp. 184. Price: 20s.

FOR the purpose of this review it was thought that it might be informative to compare the arrangement of subject matter in the first edition with that in this new second edition. There was considerable delay in securing a copy of the former from the library, owing to a long "queue" of prior claimants. When it was obtained, it had a decrepit, well-thumbed appearance. This evidence of constant demand and use should be gratifying to the authors and is a good reason for the printing of a second edition.

A comparison of the two editions indicates careful revision; a number of minor alterations, presumably made in the interests of brevity or clarity, achieve these objects. The authors themselves draw attention in their preface to the second edition to two major alterations. One of these is the inclusion of a chapter on therapeutic venesection. It is a clear exposition of indications for this procedure; but opinions may differ as to whether therapeutic measures are within the province of a Red Cross Transfusion Service, in spite of some manifest advantages in carrying them out in such a unit. The other major alteration is that the authors now recognize that the polyvinylpyrrolidone method alone cannot always be relied on to detect incompatibilities due to rare antibodies in a patient's serum. They therefore recommend, in this edition, the indirect Coombs test as the most delicate one for detecting such antibodies. It is known, however, that even this test occasionally fails to detect antibodies in sera in which they can be demonstrated in moderately high titres by the papain method, and can be shown to be present by the albumin test. It seems that it might be practical to set up an indirect Coombs test and, during the long incubation period necessary as part of this test, to carry out one of the quicker procedures, thus increasing slightly the chance of detection of rare antibodies.

Two new appendices, one showing the distribution of malaria in those countries for which data are available, and the other illustrating the C.S.I.R.O. needle sharpener, are also useful additions to this book. There is little else to add to the opinions expressed in a review of the first edition. Again the authors and the publishers are to be congratulated on the success which has been achieved by this little book.

The Fats of Life: The Theory and Practice of Eating and Cooking to Avoid Coronary Heart Disease. By H. M. Whyte; 1961. Sydney: Ure Smith Pty. Ltd. 7¼" × 5", pp. 96 with illustrations. Price: 15s.

THIS small book has been prepared by the Director of Medical Research at the Kanematsu Memorial Institute at Sydney Hospital, so that its scientific basis is beyond reproach. Its publication has been timed to coincide with the National Heart Campaign, to which all its royalties are to be donated. Unfortunately, its price may prevent it from becoming the household volume it deserves to be.

The theoretical basis of the rôle of cholesterol and saturated fats in coronary heart disease is reviewed briefly and at an easily absorbable level. The argument is put that, whereas the best scientific minds are not 100% sure that by altering one's diet one can decrease one's chances of acquiring coronary heart disease, nevertheless evidence seems to point that way, and since (says the author) one may gain in fitness and lose no eating enjoyment from such a change, why not?

Two programmes are given—a short-term one for weight reduction (the weights recommended by the author for various heights will probably appear surprisingly low to most people) and one for a life-long "altered fat" régime. The charts are easy to follow, and recipes are given, allegedly tried and tested in Australian domestic kitchens.

Two criticisms may be made of this book apart from its cost. One is that, in encouraging weight reduction and advising weekly weighing, the author omits to mention normal fluctuation in women's weights due to the menstrual cycle. An apparent premenstrual increase in weight after a fortnight's rigid dieting has discouraged many an enthusiastic dieter. The other criticism is that it is just a little too radical a change expressed just a little too baldly to appeal to the average Australian. We have no quarrel with the contents of the book, but we believe its lesson would be more effectively taught by a visual popular education programme which made use of poster space in public vehicles, television and newspapers, especially women's magazines. Recipes, for instance, are much more seductive if accompanied by coloured pictures.

In view of the recent incident in the House provoked by the booklet "Eat Better for Less", one wonders what rumblings may be heard in high places when this volume has been digested.

Diagnostic Stomatology: A Clinical Pathologic Approach. By E. Cheraskin, M.D., D.M.D.; 1961. New York, Toronto, London: McGraw-Hill Book Company, Inc. 9" × 6", pp. 350, with illustrations. Price: $12.50.

THIS is a book which will be appreciated by medical and dental practitioners who seek information on "oral lesions in relation to the total diagnostic picture". The main value of the work is in the emphasis given to the clinicopathological studies required for the clinician to approach a diagnostic problem. The book has good print, and the illustrations are of good standard. The publication includes short chapters dealing with normal laboratory values and the physiology and pathology of blood, urine and saliva. These sections are followed by 12 chapters on tests for detection of infection, chemical intoxication, neoplasia, hormonal imbalance, nutritional disturbances, stress disorders and hæmorrhagic diathesis.

It is clear that the author endeavours to condense, in a matter of 317 pages, material which supports his view of the value of the "clinical pathology laboratory" in the detection of oral disease problems. It is reasonable to state that this publication stimulates the study of oral manifestations in relation to systemic diseases. Although much must remain unwritten in a book of this size, nevertheless, it is a good book. The basic information will be of great value to the reader who is interested in this study.

Dentistry for the Pre-School Child. By G. N. Davies, D.D.S. (N.Z.), and Richard M. King, B.D.S. (N.Z.), M.S. (Univ. of Mich.); 1961. Edinburgh and London: E. & S. Livingstone. 8½" × 5½", pp. 276, with illustrations. Price: 32s. 6d. (English).

IN this book the authors deliberately set out to emphasize principles rather than technique, and in this they are quite successful, except for a few minor deviations into technical descriptions. The book being well illustrated, one can assume that students will devise their own techniques as required. The subject matter of this volume of 250 pages is very comprehensive, considerable emphasis being laid upon diet, nutrition and preventive dentistry. The text is throughout backed up by more than adequate bibliographies, and the style is simple and very easily read. The feeling we experienced in studying this book is that the subject is approached in a down-to-earth yet sensitive manner. The authors show considerable finesse in their handling of the delicate parent-child-dentist triangle; moreover, they evince

a keen insight into child behaviour as well as a kind and sympathetic attitude to the manifold problems dealt with.

In Chapter 3, children are extensively classified into various age groups and behaviour patterns, and one could reasonably expect a similar classification of the parents, who are generally the "*causa causans*". Parent management is, however, dealt with in one small paragraph. Similarly, more could have been said on ways and means of parent education.

Chapter 7, dealing with "Anomalies of Primary Teeth", is very well illustrated photographically and radiographically; but the authors conveniently omit a serious and not infrequent problem belonging to this category—namely, germination of the deciduous lateral incisor and canine.

Chapter 8, dealing with "Interceptive Orthodontics", is also well tabulated and well illustrated. The authors have scruples regarding the terms "interceptive" and "preventive" which seem rather facetious. However, emphasis is wisely laid on the need for space maintainers in various contingencies, and the various types of space maintainer are graphically illustrated. The "spring and ligature retainer", with detailed technique of construction on page 152, is in our opinion a very efficient food trap, calculated to predispose towards caries at the points of contact with adjacent teeth—the more so, since on page 149 the authors state that this device may be used for a period of less than three years.

The chapter dealing with traumatic injuries to primary teeth is very helpful as far as it goes. However, illustrations of splinting would make the section even more useful for undergraduate use.

In spite of any faults which may be found with this new publication, it stands in its present form as a very valuable contribution to dental literature. It may well be used as a textbook for undergraduates, and equally well as a reference book for the practising pædodontist.

The Psychology of Deafness: Sensory Deprivation, Learning, and Adjustment. By Helmer R. Myklebust; 1960. New York and London: Grune & Stratton. 6" x 9", pp. 406. Price not stated.

THE preface states that this book is written mainly as a text for advanced audiology, language pathology, special education and psychology. It is thought that it may be useful also in otolaryngology, psychiatry, pædiatrics, neurology and rehabilitation. There is no doubt of its value to those engaged in these disciplines.

Commencing with a chapter on the nature and extent of deafness, the work then presents the results of statistical studies in deaf schools throughout the age groups, and the observations and findings in the matter of aptitude and adaptation to adult life. The earliest reported studies suggested that the general intellectual level in deaf children was likely to be below that of normal children, and it was suggested that the disease causing deafness also affected the brain. To accept such generalizations uncritically is to minimize the problem. Any sensory deprivation limits the world of experience. It restricts the material resources from which the mind develops, and because total experience is reduced, there is an imposition on the balance and equilibrium of all psychological processes. The psychological structure which results seems highly characteristic. Special methods are needed to assess intelligence in an individual who has never learned through verbal expression. A large part of this work sets out the findings by the author and others using accepted psychological and aptitude-testing methods in deaf schools. The foremost conclusions are that deaf children are on the average retarded two years mentally and five years educationally. The basic problem is not mental inferiority. Recent studies, using non-verbal individual performance methods such as "draw a man" tests, appear to indicate that children in schools for the deaf are of average intelligence, although these may be below average scores on the verbal tests. Studies have disclosed that on memory functions the deaf are highly successful, and in some memory functions they are superior. The highest level of memory ability is for design, while the lowest is for digits. In a wide range of age groups in a nation-wide survey, no difference in intelligence was found between deaf and hearing males, but there was a significant inferiority in the deaf females. Day versus residential school placement is not of major consequence. There is an as yet incompleted task for the educator to devise methods for alleviation of the intellectual impositions of deafness, to the greatest extent possible. In the adult deafened, as well as in children, personality development and emotional adjustment are problems to which much attention has been devoted, although more study and practical application are needed. Comparative studies have been made of two groups of deaf adults; one suffered the onset of deafness in adult life, and in the other hearing loss occurred in early life. Most found deafness a great handicap causing difficult relationship with friends and relatives and apprehension about employment, and not infrequently bringing about personality changes and psychotic disorders. The total evidence in regard to age of onset suggests that the later deafness is sustained, the less impact it will have on personality factors. The problems of personality development and emotional adjustment have been widely studied, and conclusions again are drawn from analysis of a number of recognized test methods. Under the title deafness and motor functions, limitations of reaction time and some skilful motor reactions are considered. It is emphasized that in many patients not only the acoustic, but also the non-acoustic, labyrinth may be involved, so that balance may be affected. The influence of deafness on development of social maturity and attainment of independence is discussed. The findings after study of a large group of children are analysed in relation to social maturity and factors of intelligence. Language and speech development, speech-reading and reading and writing occupy a further large section of the book. Finally, other handicaps are considered in relation to special abilities and aptitudes.

This book is somewhat technical; yet most of it can be readily followed in its broadest message of explaining the difficulties and handicaps of the deafened and hard of hearing. It is regretted that the author has not, at least in an appendix, given an outline of the nature and design of the various tests of intelligence and aptitude, so that those who are not practical psychologists might better understand the methods. This work must be most useful to those who have to organize the teaching of deaf children or the direction of adult deaf societies. Every otologist should include this work in his studies, if he would fit himself to advise those whom he cannot cure, at least where and how to obtain maximum scientifically-based assistance in the matter of education or rehabilitation.

Variations on a Theme by Sydenham: Smallpox. By P. B. Wilkinson, M.R.C.P.; 1959. Bristol: John Wright & Sons Limited. 9¾" x 7¼", pp. 76, with 69 illustrations. Price: 17s. 6d. (English).

THIS short, scholarly monograph on the clinical features of smallpox was written from observations made by the author during an epidemic of smallpox which occurred in Hong Kong in 1937-1938. During the outbreak, over 800 patients were admitted to the smallpox hospital with which Dr. Wilkinson was associated. The title, an historical introduction and, indeed, the whole essay pay homage to Thomas Sydenham, "Prince of Physicians", whose classical account of smallpox was drawn especially from his experience during London epidemics of 1667-1669 and 1674-1675.

The work is especially valuable for its careful, vividly phrased description of the smallpox, as seen in this outbreak, and for an excellent series of photographic illustrations. The clinical picture of the disease and its various types—discrete, confluent, toxic and modified—are admirably discussed. The author firmly discards "hæmorrhagic smallpox" as a classificatory term, since all sufferers are apt to bleed readily, and in toxic smallpox this tendency is a dominant feature. Sections on complications, differential diagnosis and treatment—as exhibited at that time—are also included. The author's stylish, picturesque writing provides a rare pleasure. Illustrations are essential for a proper study of the subject, and their usual absence or inadequacy in textbooks of medicine is a grave defect. Here they are of the same high standard as the text, and add to the reference value of the book. The only error noted appears in the title of Figure 30, where "centrifugal" and "centripetal" are transposed.

The work should find a place in all medical libraries, and is especially recommended to practitioners and health officers who have the often worrying responsibility of dealing with suspected smallpox.

Clinical Tropical Diseases. By A. R. D. Adams and B. G. Maegraith; second edition; 1960. Oxford: Blackwell Scientific Publications. 8¾" x 5½", pp. 552, with illustrations. Price: 52s. 6d. (English).

THE stated aim of the authors of this book is to supply essential facts as dogmatically and precisely as they can, on the subject of clinical diagnosis and treatment of those diseases which occur primarily in the tropics. From this

point of view, the book is an excellent outline for the student for the Diploma of Tropical Medicine, or for those who may occasionally wish to refer quickly to an authoritative source. The subject matter is arranged by chapters in alphabetical order supported by an extensive index.

There are, however, some points of detail which require comment. Cutaneous leishmaniasis is said to occur widely in the tropical areas of Australasia (besides other countries). It is true that a few cases of this disease are seen from time to time in Australia; but the patients have been immigrants infected in their country of origin—often in the Mediterranean area. It is also true that a single case was reported years ago in the region of the Gulf of Carpentaria, but the authenticity is doubtful. In early annual reports from Netherlands New Guinea the disease was recorded, but inquiry showed that this was done in error.

The treatment of malaria is discussed in detail; but it would be preferable to see all dosages calculated in terms of body weight rather than age, which is an uncertain quantity in many tropical communities. Again, the suggested use of "Proguanil" as an alternative to chloroquine in treating non-immune children, even if their malaria is uncomplicated, contrasts with the statement that the drug is seldom used in adults because of its relatively slow action. Confining patients to bed for ten days because of the possible toxic effects of 15 mg. of primaquine is surely being overcautious and economically extravagant.

Perhaps dogmatism is going too far when the bald statement is made that carcinomatous changes are common in long-standing indolent tropical ulcers. Histological examination of such ulcers often reveals islets of epithelial cells deep in the tissue, and interpretation of such sections may be extremely difficult. Metastasis to the inguinal glands is seen in New Guinea, but this appears to be fairly rare. This point is important, because chronic ulcers are comparatively frequent, and amputation of a leg in a tropical community can lead to very serious disability.

The book indicates by its title that it is concerned with disease seen at the bedside, and thus removed from its social setting and apart from the individual who is sick. This may perhaps be a valid viewpoint or abstraction, but it is surely part of the physician's management of the patient to exploit the illness as a teaching situation; the European ill with malaria and with an enlarged spleen can be very receptive of advice concerning malaria prophylaxis; the mother who is worried about her infant with diarrhœa often wants to know how to prevent it from happening again. Face-to-face situations such as these should be used for health education by the physician. It is thought that such considerations as these have their place even in an impersonal approach to clinical tropical diseases.

These matters aside, the book must have a place in the library of those interested in tropical medicine.

Cerebral Dominance and Its Relation to Psychological Function. By O. L. Zangwill, M.A.; The Henderson Trust Lectures, No. 19; 1960. Edinburgh and London: Oliver & Boyd; Adelaide: Rigby Ltd. 9¾" × 7¼", pp. 40. Price: 18s. 6d.

IN this short but extremely interesting study, Professor Zangwill takes as his starting point the observation that while dysphasia in right-handed individuals is almost invariably associated with a lesion in the left cerebral hemisphere, the converse is not necessarily true. Left-handedness cannot then be regarded as the simple opposite of right-handedness; indeed, a considerable proportion of those who appear to be left-handed show varying mixtures of lateral preferences.

Beginning with an inquiry into the incidence of language disorders in left-handed patients who had sustained strictly unilateral brain injuries, the author is able to draw several tentative conclusions. The most interesting are that in predominantly left-handed patients, the dominant hemisphere as conventionally ascertained is more often the left than the right, and that recovery from aphasia is in some way related to handedness, being more complete in those who have some sinistral characteristics or who have left-handed relatives than in those who are fully dextral. This latter conclusion bearing on prognosis will be of interest to clinicians.

Professor Zangwill then turns to a consideration of the possible relation of cerebral dominance to specific educational difficulty. In analysing 20 cases of backwardness in reading and spelling, he is able to demonstrate that some sinistral tendency, personal or familial, was present in 75%. His conclusion, once again tentative, is that there is a category of individuals, in whom language and kindred processes are imperfectly lateralized, who may be said to lack determinate cerebral dominance. Finally, discussing the rôle of psychogenic factors in educational disability, he suggests that the ambilateral constitution provides no more than a setting for the interplay of innate and acquired tendencies in growth and development.

This monograph can be highly recommended to those who have from time to time been confused by an anomalous relationship between symptoms and apparent cerebral dominance.

Atlas of Medical Mycology. By Emma Sadler Moss, B.S., B.M., M.D., and Albert Louis McQuown, B.S., B.M., M.D.; second edition; 1960. Baltimore: Williams & Wilkins Co. 10" × 6¾", pp. 348, with many illustrations. Price: £6 1s.

THE first edition of this atlas, published seven years ago, was the natural outcome of a series of exhibits for medical conventions, demonstrations and lectures. The senior author, Emma Sadler Moss, is Director of the Department of Pathology at the Charity Hospital of Louisiana at New Orleans; the co-author, Albert Louis McQuown, is Visiting Pathologist at the same hospital, as well as Director of the Pathology Laboratory, Baton Rouge, and both authors are on the staff of the Louisiana State University School of Medicine. In the preface to the first edition, they state that the various wards of the Charity Hospital have provided them with a wealth of clinical and laboratory material, as well as unusual opportunities for observation and study of fungous disease. This is amply borne out by the number and variety of the illustrations showing patients with mycotic infections. This wealth of clinical material is the strong foundation on which the book is built, and it will be of great interest to clinicians rather than to laboratory workers or research students. It is a clinical rather than a scientific work, and it begins at the beginning, without assuming any knowledge of myocology on the part of the reader. As the authors observe, there may be many who feel that they have over-simplified the clinical and laboratory diagnosis of fungous infections. The presentation of clinical material is excellent, but the illustrations of cultures and culture mounts are not nearly so well selected. Chapter 28 on culture media is most disappointing; the reader is referred to commercial products instead of being given precise directions for preparation.

The book is beautifully printed and produced, and will prove an interesting and pleasant supplement to the standard textbooks on medical mycology.

Books Received.

[The mention of a book in this column does not imply that no review will appear in a subsequent issue.]

"Every Man Our Neighbour: A Brief History of the Massachusetts General Hospital, 1811-1961", by J. E. Garland; 1961. Boston, Toronto: Little, Brown and Company. 9" × 6", pp. 56, with illustrations. Price not stated.

"Ionizing Radiation and Health", by Bo Lindell and R. L. Dobson; 1961, Public Health Papers, No. 6. Geneva: World Health Organization. 8½" × 5½", pp. 82. Price: 5s. (English).

"Basic Nursing Education Programmes: A Guide to Their Planning", by Katherine Lyman; Public Health Papers, No. 7; 1961. Geneva: World Health Organization. 8½" × 5½", pp. 82. Price: 5s. (English).

"Arthropod-Borne Viruses: Report of a Study Group", World Health Organization Technical Report Series, No. 219; 1961. Geneva: World Health Organization. 9½" × 6¼", pp. 68. Price: 5s. (English).

"Pharmaceutical Advertising: A Survey of Existing Legislation". Offprint from International Digest of Health Legislation, Vol. 12, No. 1; 1961. Geneva: World Health Organization. 9½" × 6¼", pp. 53. Price: 3s. 6d. (English).

"The Medical Management of Acute Poisoning", by Gordon Cumming, B.Sc., Ph.D., M.B., Ch.B., A.R.I.C.; 1961. London: Cassell & Company Ltd. 7¼" × 5", pp. 128. Price: 10s. 6d. net (English).

"Drugs in the Treatment of Disease". Specially Commissioned Articles from the British Medical Journal; 1961. London: British Medical Association. 8½" × 5½", pp. 516. Price: 35s.

The Medical Journal of Australia

SATURDAY, AUGUST 26, 1961.

PHENYLKETONURIA.

SINCE the concept of "inborn errors of metabolism" was introduced by Sir Archibald Garrod in 1908, the number of diseases which have been attributed to genetic defects has steadily increased. The trickle has become a stream, and may soon become a torrent with the development of new techniques in biochemistry and microscopy. It is now accepted that not only distinct metabolic disorders, but many of the "diatheses" which predispose to disease are examples of "inborn errors".

One of the definitive metabolic disorders is phenylketonuria. This disorder was identified in 1934 by Folling,[1] a Norwegian biochemist, who found that a group of mentally retarded children with similar physical characteristics excreted urine containing phenyl pyruvic acid. When specimens of urine from these children were tested routinely for di-acetic acid with ferric chloride solution, instead of the anticipated "port wine" colour change, a dark green colour developed. Since Folling's discovery the condition has been identified in many countries, and in those of the European race the incidence is approximately one affected infant in every 20,000 births. It has been established now that the familial distribution is typical of a Mendelian recessive character. Most infants who have inherited the homozygous form of the disease become severe mental defectives. Occasional children are less severely affected and are sometimes regarded as "behaviour problems". The diagnosis is made difficult by the fact that children with phenylketonuria have few characteristic physical features; in fact, most are physically attractive with fair colouring, pale skin, blond hair and blue eyes. They are usually very active, and this characteristic combined with their low intelligence makes them difficult to handle. Sometimes they have a coarse tremor, and frequently they are afflicted with an eczematous rash. Some develop epileptic seizures. In general, an early diagnosis can be made only by routine examination of the urine, unless the condition is suspected from the family history. Unlike children whose mental retardation is accompanied by characteristic physical features, a diagnosis is often not made until the child at the age of two or three years is obviously retarded. Even when parents suspect that their child is "slow" and seek medical advice, the correct diagnosis may not be made because the simple routine urine test is not performed. The importance of early diagnosis and the tragedy of non-recognition lie in the fact that phenylketonuria is a progressive metabolic disorder which can be identified easily and treated effectively. If the progress of the disease is arrested in infancy it is possible to produce a child whose intelligence is within the normal range. As with cretins, however, the critical age for the institution of treatment is within the first few months or even weeks of life.

The metabolic disturbance which results in "phenylketonuria" can be attributed, for the most part, to a deficiency in one component of the enzyme system which is responsible for the hydroxylation of phenylalanine to tyrosine. The system first described by Udenfriend and Cooper[2] in 1952 is complex and consists of at least two protein fractions, both of which are necessary for the hydroxylation of phenylalanine. In phenylketonuria there is an interruption of the phenylalanine-tyrosine pathway, and also an interference with tryptophane metabolism. Hsia[3] has put forward a simplified explanation for those whose interest in this condition is mainly clinical. The deficiency of phenylalanine hydroxylase causes an excessive accumulation of *l*-phenylalanine in body fluids. The excess phenylalanine is converted by its transaminase to phenyl pyruvic acid. This is converted to phenyl lactic, phenyl acetic and phenyl glutamic acids, and the combination is excreted in the urine giving the characteristic green colour with ferric chloride solution. For reasons which are obscure, O-hydroxy phenyl acetic acid, M-hydroxy phenyl acetic acid, and indole products derived from tyrosine and tryptophane are also found in the urine of these patients. The excessive phenylalanine inhibits the normal pathways of tyrosine metabolism with a disturbance in the production of melanin and adrenaline. The mental retardation is probably due to the excessive phenylalanine or its derivatives rather than to an insufficiency of tyrosine and its products, but no satisfactory explanation has been given to account for the metabolic disturbance beyond this point. There may be a general derangement of intracellular amino-acid balance. The suggestion that a decreased concentration of 5-hydroxy-tryptamine may contribute to the mental defect has also been made.

Once the nature of the biochemical defect in phenylketonuria became established, attempts were made to treat children suffering from this condition by giving them diets with a low phenylalanine content. The early trials suffered from the fact that the children who were studied were already mentally defective and had progressed to a stage where no more than minor improvements could be expected. It was generally agreed that, even though improvements in intelligence were doubtful, the behaviour improved. This was important, as it allowed parents of affected children to care for them at home. Final proof that diets low in phenylalanine were effective was obtained when serial observations were made on children who had received treatment from early infancy. Reports from

[1] *Hoppe-Seylers Z. physiol. Chem.*, 1934, 227: 169.

[2] *J. Biol. Chem.*, 1952, 194: 503.

[3] "Inborn Errors of Metabolism", 1959, The Year Book Publishers, Inc., Chicago: 109.

several centres[4,5,6,7] left little doubt that these infants could develop into children with intelligence within the normal range. Dietary management is not without its difficulties, however, as Lewis[5] and Moncrieff and Wilkinson[6] have stressed in recent articles. In early life infants must be fed on a synthetic low-phenylalanine milk based on casein hydrolysate ("Lofenalac", Mead Johnson; "Cymogran", Allen & Hanburys; "Minafen", Trufood). These preparations are expensive, but recently one of them, "Lofenalac", has become available as a Pharmaceutical Benefit, and parents of affected children need not face the despairing prospect of a lifetime of expense. In infancy, a diet with a low phenylalanine content may interfere seriously with growth and cause malnutrition[5,6] which may be fatal. There remains a further problem of dietary management. It is not yet known for how long the diet must be maintained. It is probable that some affected infants who are born with a decreased tolerance for phenylalanine can later tolerate increasing amounts in their diets. There may be two degrees of phenylalanine hydroxylase deficiency. In those patients with the more severe variety, intolerance to phenylalanine is life-long; in those with the less severe variety, tolerance increases with age. It seems likely that some patients can look forward to relaxing their diets in later life, whereas others may face a lifetime of dietary restrictions. At least in the more mature years, a falling off in intellectual performance can be detected more readily than in infancy, and treatment recommenced with the minimum of delay. A good control could be maintained by plasma phenylalanine estimations, and plasma levels could be kept within bounds by diets graded in their phenylalanine contents.

It is quite evident that successful treatment of children with phenylketonuria depends on early detection. This presents no difficulty if there is a known family history. Apparently normal heterozygote carriers of the abnormal gene in families with a history of the disorder can be identified by an impaired phenylalanine tolerance test. The alternative method of detection is a screening of infants early in life. Unfortunately the phenyl compounds do not appear in the urine until about the third week of life, so that routine testing in maternity hospitals is valueless for most infants. Routine urine tests may be done on infants' urines when the mothers attend their doctors for their post-natal examinations, or alternatively when they first attend their local infant health centre. A screening survey to detect infants with phenylketonuria has been in existence in Birmingham for over two years,[5] the number of affected infants who have given true positive responses to tests being of the expected order of 1 in 20,000 births. In Victoria and Western Australia routine urine testing for phenylketonuria has been commenced in infant health clinics. The actual testing of urine is a very simple procedure as phenyl pyruvic acid and other phenyl substances can be identified on freshly wet diapers without the tedium of collecting urine from infants. Ferric chloride (10%) solution itself or "Phenistix" (Ames) may be used with equal facility.

Occasionally comments are expressed that the expense of urine testing on a large scale and of low-phenylalanine diets is unjustified in view of the infrequency of the disorder in the population. Quite apart from humanitarian reasons, the combined expenses of testing and diets are considerably less than the cost of custodial care of unmanageable, often destructive "imbeciles" for many decades of their lives.

A final problem is one which will become more acute in the very near future, but it is not confined to phenylketonuria. Modern medicine is protecting those with genetic defects, homozygotes of many varieties, who until recently could not have survived to a procreative age. As with the threatened population explosion, this problem must be faced sooner or later, but the responsibility for decisions of such magnitude is one which is too onerous to be borne entirely by the medical profession.

[4] *Amer. J. Dis. Child.*, 1959, 97: 345.
[5] MED. J. AUST., 1960, 2: 811.
[6] *Brit. med. J.*, 1961, 1: 763.
[7] *Brit. med. J.*, 1961, 1: 767.
[8] *Brit. med. J.*, 1961, 1: 771.

Comments and Abstracts.

CRYPTOCOCCOSIS OF BONE.

CRYPTOCOCCOSIS or torulosis (some prefer the older term, though the infecting organism is now known as *Cryptococcus neoformans*) is a relatively rare condition, though it appears to be commoner in Australia than in many other countries, and the diagnosis is often overlooked, at least in the early stages of the disease. We discussed the condition at some length in these columns two years ago,[1] but did not refer to one of its more unusual manifestations, namely cryptococcal osteomyelitis. This usually occurs as a part of a generalized involvement, but it may be the presenting syndrome, or the one which leads to the correct diagnosis of an obscure illness. Two cases of cryptococcosis of bone, both from Australia, are reported in a recent issue of the *Journal of Bone and Joint Surgery*. In the first case, reported by E. Beatrix Durie and L. MacDonald[2] of Sydney, the patient had been hospitalized three years previously for an obscure lung condition which had been diagnosed as tuberculosis, in spite of failure to demonstrate tubercle bacilli. In his subsequent illness he presented with a fluctuant, tender swelling on the antero-medial aspect of the left leg. Radiographs showed a sharply defined area of destruction in the mid-shaft of the tibia, and generalized blotchy and profuse infiltration of both lungs. The Mantoux response was negative, and a tentative diagnosis of sarcoidosis was made. However, aspiration of the abscess yielded blood-stained pus from which *C. neoformans* was grown on repeated occasions. The bone cyst was curetted, and healed after discharging for two months, and the patient was lost to sight. He is known to have died two years later, but no other information was obtainable; in the absence of evidence to the contrary, it is tempting to conclude that he died from cryptococcal disease. No specific therapy was attempted, as this was before the advent of effective antifungal agents.

The second case is reported by E. A. Allcock[3] of Melbourne. In this instance the patient reported with pain and swelling of the head and proximal third of the shaft of the right radius, and a swelling on the dorsum of the right foot. She also gave a history of swollen glands in the neck for 12 years, though no reason for this had been

[1] MED. J. AUST., 1959, 1: 404 (March 21).
[2] *J. Bone Jt Surg.*, 1961, 43B: 68 (February).
[3] *Ibidem*, page 71.

found, and splenomegaly had been repeatedly observed during this period. Radiographs showed partial destruction of the base and proximal end of the shaft of the fourth right metatarsal, and a similar lesion in the upper third of the right radius. Both abscesses were explored, and *C. neoformans* was recovered, with no evidence of any other infecting organism. X-ray examination of the lungs showed a diffuse opacity throughout the right lower lobe and an enlarged gland at the right hilum, which was calcified at its periphery. No localized toruloma was found. Biopsy of the glands in the neck showed the appearances of Boeck's sarcoid, and infecting organisms could not be demonstrated. A lumbar puncture was done, and the cerebro-spinal fluid was found to be normal.

The bone abscesses healed after two further operations on each site, and normal function was restored. Treatment with amphotericin B was attempted, and two intravenous infusions of the drug were given, but the severity of the patient's reactions prevented continuation of the therapy. The patient has remained well during the three years since her discharge from hospital, but neither the enlarged neck glands nor the radiological appearances of the lungs have changed. The erythrocyte sedimentation rate remains high, and Allcock regards the ultimate prognosis as still doubtful, with the possibility that cryptococcal meningitis may yet develop.

In his discussion of the case, Allcock states that V. P. Collins was able to collect 20 cases of cryptococcal osteomyelitis in a review of the literature in 1950, and that a bony focus is almost always caused by blood-borne infection, implying a primary lesion elsewhere.

ANOTHER NEW PENICILLIN.

"PENBRITIN" is the name of the latest addition to the penicillins developed in England by Beecham Research Laboratories. The isolation by F. R. Batchelor *et alii*[1] (1959) of the penicillin nucleus 6-amino penicillanic acid is now familiar to most people and this latest penicillin is a further development. It was predicted when "Broxil" (phenethicillin) was made known that it would not be long before other important components would follow and such has been the case. "Broxil" or phenethicillin is for use by mouth, and is effective in a similar way to the older phenoxymethyl penicillin (penicillin V).

Perhaps the most important recent compound to become available has been "Celbenin" (methecillin), whose value is chiefly against resistant staphylococci which are penicillinase producers. "Celbenin" is given by injection in a dose of 100 mg. per kilogram per day; the cost of this is at least £4 daily for an adult. Now comes "Penbritin", a broad-spectrum antibiotic effective against some Gram-negative organisms including certain strains of *Escherichia coli* and *Hæmophilus influenzæ*, as well as a wide range of Gram-positive bacteria. The activity *in vitro* is similar to tetracycline and chloramphenicol. G. W. Robinson and Shirley Stevens, of the Beecham Research Laboratories, in the *British Medical Journal* of July 22, 1961, give further details of the promising field for "Penbritin". It is stated that it is more active than tetracycline and chloramphenicol against *Salmonella* species.

A note of caution is necessary until the results of reasonable clinical trials along the lines suggested by the in-vitro tests are available. The only clinical data available are given in the article in the same journal by G. T. Stewart, H. M. T. Coles, H. H. Nixon and R. J. Holt, who used the drug on 28 patients. "Penbritin" was given orally in a dose of 50 to 100 mg. per kilogram per day. It is freely absorbed and maintains a bactericidal level in the plasma for four hours or more. It is rapidly excreted in very high concentration in the urine. A transient rash was the only toxic effect noted in three patients. We cannot go further than these authors, who state that "Penbritin" warrants further trial as a bactericidal penicillin-like drug with the antibacterial range of the tetracyclines.

[1] *Nature (Lond.)*, 1959, 183: 257 (January 24).

CLINICAL ASPECTS OF MEGAVOLTAGE THERAPY.

AT a meeting of the Royal Society of Medicine, Section of Radiology, held on January 15, 1960, four papers were presented by members of the staff of the Christie Hospital, Manchester, which dealt with their clinical experience since 1955 in the treatment of certain malignant conditions with the 4 MV linear accelerator. It was stressed that these were interim reports only, as five-year results were not yet available for study; however, in the past three to four years certain treatment methods had been evolved. It was stated that a higher dose of radiation at 4 MV levels was necessary to achieve a given effect, as compared with 250 kv.

In the first paper, R. Gibb[1] considers large field therapy, using seminoma of the testis as an example. With seminoma, the irradiated volume includes the scrotum, and the inguinal, iliac and paraaortic lymph-node areas. This volume should be irradiated in one block and as homogeneously as possible. The kidneys are shielded, and this is done with the help of an intravenous pyelogram with a wire marker on the skin. The upper margin of the anterior field is placed at the level of the xiphisternum allowing clearance of the upper paraaortic nodes, and the lower edge is at the perineum. In comparison with 250 kv irradiation, there is an almost identical drop in the white cell count, and radiation sickness and bowel reaction do not appear to differ significantly. However, 4 MV radiation has simplified the technique of treating the abdomen, as it enables a homogeneous dose to be given with the use of irregularly shaped fields, and it appears that the patient tolerates radiation rather better than with methods previously available.

In the next paper, J. G. Stewart[2] considers the use of 4 MV radiation with wedge filter techniques in the treatment of carcinomas of the alveolus and antrum. In the former case it is possible to use an anterior and a lateral field and achieve homogeneous dosage to the anterior and posterior alveolus. A dose of 6000 rads is given in three weeks. In carcinomas of the antrum where involvement is confined to structures below a horizontal plane through the roof of the antrum, an anterior and a lateral wedged pair of fields gives adequate coverage. When orbit, ethmoid cells or frontal sinuses are involved, an anterior and superior wedged pair of fields gives an adequate volume of irradiated tissue and enables the contralateral eye to be protected. An L-shaped field from the front can also be used, as the depth dose at 4 MV is relatively independent of area, or shape of field. In the case of carcinoma of the alveolus the two-year survival rate is 48% as compared to 54% with conventional deep X-ray therapy. The primary recurrence rate at two years, however, is only 33% as compared to 45% with deep X-ray therapy. In carcinoma of the antrum the two-year survival rate is 38% as against 31% (deep X-ray therapy) and the primary recurrence rate is 47% as compared to 60% (deep X-ray therapy). However, it is pointed out that the numbers treated by megavoltage therapy are as yet too small to enable us to base any conclusions on them.

In the third paper, K. S. Holmes[3] discussed the treatment of carcinoma of the middle ear. Prior to megavoltage therapy, carcinoma in this site was treated by a cluster of X-ray fields. The middle ear being a cavity in bone made the use of harder radiation desirable, and a technique using a 4 MV linear accelerator is described. In the majority of cases it is impossible to localize the tumour with exactitude, particularly as the spread in bone may not be apparent radiographically. The treated volume should be larger than may seem at first necessary and, at a minimum, the whole of the petrous temporal bone is included. Between 1932 and 1958, 115 cases of carcinoma of the middle ear were seen at the Christie Hospital; of these 102 were squamous-cell carcinomas, five were reported as "carcinoma", three were adenocarcinomas,

[1] *Proc. roy. Soc. Med.*, 1960, 53: 235 (April).
[2] *Ibidem*, page 239.
[3] *Ibidem*, page 242.

three were transitional cell carcinomas, and one was an anaplastic carcinoma. A comparison of results at two years is made in those cases treated radically by various methods. With beam-directed X ray the survival rate was 30%, with a radium beam it was 55%, and with the 4 MV accelerator it was 77%. In the pre-megavoltage series the survival fell by only 6% between the two-year and the five-year results, so it is thought a very great improvement in results will be achieved by the use of the 4 MV linear accelerator in this rare condition.

In the fourth paper R. C. S. Pointon discusses the use of the linear accelerator in the treatment of bladder carcinoma. With conventional therapy the delivery of an adequate dose of radiation to a deep-seated organ like the bladder is difficult and entails the production of severe reactions. At the Christie Hospital, all early bladder carcinomas up to a diameter of 4 cm. are still treated by permanent radon-seed implants. In other tumours the principle of small volume/high dose has been adhered to, as these tumours are of limited sensitivity. No attempt has been made to include the regional lymph nodes in this treatment volume. Localization is achieved by the insertion of inactive gold seeds or by a cystogram. The three-year survival rate in patients treated by megavoltage is 29%, as compared to 27% in the pre-megavoltage cases treated during 1953-1954. The symptoms due to bladder reaction have not been severe, but it is difficult not to produce some degree of rectal reaction when a bladder carcinoma is being treated radically. Pointon sums up by stating that, with the 4 MV linear accelerator, the treatment of bladder carcinoma has become simpler and less wearing to the patient, and that initial results have been satisfactory. However, he points out that a full assessment in comparison with the method previously employed depends on the findings of the random selection trial now in progress.

SHORTER ABSTRACTS.

RADIOLOGY.

TUBERCULOSIS OF THE VAULT OF THE SKULL. C. J. Barton, *Brit. J. Radiol.*, 1961, 34: 286-290 (May).

TUBERCULOSIS of the vault of the skull is an uncommon condition though it cannot be called rare in areas where there is a high incidence of tuberculosis. The first demonstrable radiological change is a small area of translucency due to decalcification, such as is seen in any bone as a response to tuberculous infection. As the lesion progresses, the area of decalcification increases in size and bone destruction occurs. If a circumscribed lesion develops this gives rise to a clearly demarcated translucent area on the radiograph which may show a surrounding area of slightly increased density. A tangential view may then show destruction of either cortex. If there is progressive infiltration the area of translucency spreads in a irregular fashion, the edge is less well defined and destruction of the cortex may be seen at several joints. The speckled density of "bone sand" or actual sequestra may be visible. The diagnosis of tuberculosis cannot be made on the radiological findings alone; the demonstration of characteristic changes in the presence of a known active tuberculous focus is highly suggestive of a tuberculous ætiology.

BILOPTIN AND SOLU-BILOPTIN: FURTHER EXPERIENCE OF ORAL CHOLECYSTOGRAPHY AND CHOLANGIOGRAPHY. C. G. Whiteside, *Brit. J. Radiol.*, 1961, 34: 295-297 (May).

A TRIAL of 60 cases of oral cholecystography and cholangiography using "Biloptin" and "Solu-Biloptin" is reported. A considerable reduction in reactions is found by substituting Solu-Biloptin for Biloptin for the morning dose. The advantages of this oral medium in the primary examination of the biliary tract are as follows: (i) Visualization of the gall bladder no longer depends primarily on its concentrating power, although this undoubtedly enhances the shadow. (ii) Visualization of liver excretion ensures that the medium has been adequately absorbed and also excreted. (iii) Routine visualization of the common duct calibre gives information in two ways: (*a*) A dilated duct is usually an obstructed duct; for this purpose, 10 mm. diameter is taken as the upper limit of normality. (*b*) The diagnosis of partial biliary obstruction in cases with post-cholecystectomy symptoms is often greatly assisted by a pre-operative radiographic record of duct calibre for comparison with the post-operative examination.

NORMAL VARIATION OF THE LEFT KIDNEY. J. Frimann-Dahl, *Acta Radiol. (Stockh.)*, 1961, 55: 207-216 (March).

THE author's study indicates that in about 10% of cases the left kidney has a more or less marked bulge which may vary in position along the lateral border. It is usually most conspicuous in the middle segment and when marked gives the kidney an almost triangular shape. The bulge is most evident in adults and in the normal sized kidney, but even in small children a tendency to a similar deformity may be observed. The renal pelvis may be only slightly influenced but the calyces are often markedly changed. The deformity is probably secondary to an impression made by an overriding spleen. If unrecognized, this deformity may easily be mistaken for a cyst or even a malignant tumour. As far as the author is aware these observations have not previously been described.

MEDIONECROTIC DISSECTING ANEURYSM OF THE ABDOMINAL AORTA. H. Ludin *et alii*, *Acta Radiol. (Stockh.)*, 1961, 55: 177-185 (March).

IN a discussion of dissecting aneurysms of the abdominal aorta, the authors state that radiology can contribute important information for the evaluation of the local pathological condition underlying the clinical picture. It can also afford confirmation of the diagnosis of retroperitoneal hæmorrhage and angiographic demonstration of the nature and extent of the lesion. Injection of contrast medium well above the proximal end of the aneurysm will demonstrate or preclude the presence of an open dissection channel, and exclude the possibility of an abdominal extension of a thoracic dissection. Even a closed dissection channel may be detectable if the aorta shows a markedly unequal diameter in lateral or oblique views, or if the aortic wall is rather smooth, or if the upper limit of the narrow portion is abrupt. Irregularity of the outline of adjacent vessels would rather suggest an arteriosclerotic basis. The authors consider that high retrograde aortography, when feasible, is the procedure of choice provided the catheterization is performed very carefully.

PANTOPAQUE MYELOGRAPHY IN AVULSION OF THE BRACHIAL PLEXUS. J. Lester, *Acta Radiol. (Stockh.)*, 1961, 55: 186-192 (March).

THE author states that in performing myelography in cases of avulsion of the brachial plexus, the examination should be carried out with the patient in the prone position; 9 ml. of contrast medium should be used. The avulsions may have two different myelographic appearances, but both are often seen in one and the same case. These are (i) extradural pockets filled with contrast medium, ranging in size from a pea to a walnut and extending obliquely and caudally from the vertebral canal to the foramina; (ii) less marked changes in the lateral outline of the contrast medium at the site of the affected spinal nerves. The outline may either be convex medially, irregular and wavy, or show a slight bulge with the convexity directed laterally. In all cases absence of the usual rounded defect in the contrast filling at the exit site of the spinal nerves is a characteristic feature. A comparison with the sound side shows the condition to be asymmetrical. Radiological appearances resembling an avulsion are otherwise seen only with the rare extradural arachnoid cysts.

THE MEDIASTINUM IN PORTAL HYPERTENSION. F. H. Doyle *et alii*, *Clin. Radiol.*, 1961, 12: 114-129 (April).

ON the assumption that any prolonged and considerable increase in the volume of blood flowing through the azygos and hemiazygos veins might be expected to result in an increase in their diameters, the authors undertook an investigation in order to detect and measure radiological evidence of enlargement of these veins in portal hypertension. In this study the method used to demonstrate the azygos vein was that of antero-posterior tomography, which shows the segment of the vein lying in the right tracheo-bronchial angle. The size of the hemiazygos vein was assessed by measurement of the left paravertebral shadow opposite the bodies of the seventh, eighth and ninth dorsal vertebræ, as seen in the antero-posterior view of the thoracic spine.

Other mediastinal abnormalities occurring in patients with portal hypertension were also investigated. These consisted of abnormal right paravertebral shadows and abnormal opaque areas in the posterior part of the mediastinum. One patient showed the unusual feature of notching of the left fourth to seventh ribs. In 36 patients with portal hypertension, the mean diameter of the azygos vein, corrected to a standard patient weight of 140 lb., was 18 mm. (standard deviation 3 mm.). In a group of 48 patients without portal hypertension or any lesion known to cause azygos vein enlargement, the mean diameter of the weight-standardized azygos vein was 14·2 mm. (standard deviation 2·6 mm.). There was no good correlation between the size of the azygos vein and the extent of the collateral circulation assessed by splenic venography or the size of the œsophageal varices demonstrated by barium swallow. There was no correlation between the clinical features of ascites, encephalopathy or gastro-intestinal bleeding and the size of the azygos vein. The width of the left paravertebral shadow was measured in 40 patients with portal hypertension and in 54 control subjects. The width of the shadow is increased on the average in patients with portal hypertension, but it is not a reliable indication of the size of the hemiazygos veins. A very wide paravertebral shadow in a patient with fluid retention may be due to mediastinal œdema.

CONCOMITANT UNILATERAL HIP AND FEMORAL-SHAFT FRACTURES. E. E. Kimbrough, *J. Bone Jt Surg.*, 1961, 43A: 443-449 (April).

THE author states that concomitant unilateral hip and femoral-shaft fracture is a syndrome too frequently unrecognized. Hip fracture should be considered and excluded by clinical and, if necessary, radiological examination in all femoral-shaft fractures. Five cases of concomitant unilateral fractures of the hip and the femoral shaft are reported. In four of these and in two of the other four cases reported in the literature, the hip fractures were not recognized initially, to the detriment of the patient in some instances.

THE WIDTH (THIRD DIMENSION) OF THE SELLA TURCICA. G. Di Chiro, *Amer. J. Roentgenol.*, 1960, 84: 26-37 (July).

THE author states that the width (third dimension) of the sella turcica may be obtained from the contour of the sellar floor, which is recognizable in over 90% of cases on the standard postero-anterior radiograph of the skull. With the help of laminography, the sellar floor can be demonstrated on the frontal radiograph in all cases. The sella, as any other anatomic structure, should always be studied three-dimensionally. Some of the advantages connected with the three-dimensional appraisal of the sella are indicated. When the sella enlarges, its width enlarges too. Sellas considered normal or even small may prove to be large when studied three-dimensionally because they have expanded only or mainly in one diameter; on the other hand sellas considered to be large on the lateral radiograph may prove to be within normal limits because their width is small. When the sella enlarges, it becomes almost invariably concave in its coronal outline, vaguely resembling a saucer. Anatomical evidence is offered that the width of the sella corresponds to the width of the pituitary gland. When the three diameters of the sella are available, it is possible to calculate the volume of the sella and, with some limitations, the volume of the pituitary gland. Such calculations have been made and verified with anatomical specimens in 10 cases. A radiographic determination of the volume of the pituitary gland *in vivo* is, with certain limitations, feasible. These limitations derive from the following facts: (*a*) the intrasellar content comprises not only the pituitary gland but also its coverings; (*b*) part of the pituitary gland is extrasellar; (*c*) the sella may enlarge without enlargement of the pituitary gland for various pathological reasons; (*d*) the pituitary gland may enlarge without causing enlargement of the sella. How big the pituitary enlargement must be to cause enlargement of the sella remains to be seen. Despite these limitations, the authors believe that a radiographic volumetric appraisal of the pituitary gland may be very worth while and is undoubtedly more valuable than the linear and area measurements at present in use.

SKELETAL LESIONS IN NEUROFIBROMATOSIS. J. C. Hunt and D. G. Pugh, *Radiology*, 1961, 76: 1-20 (January).

NEUROFIBROMATOSIS (Von Recklinghausen's disease) is a congenital familial condition presenting abnormalities of the skin, nervous system, bones, and soft tissues. It represents a dysplasia of neurectodermal elements, with mesodermal dysplasia also as a basic component. Most of the skeletal defects in neurofibromatosis are expressions of the mesodermal dysplasia. Skeletal abnormalities occur frequently in the disease and are of particular interest to the radiologist. Of the 192 cases of neurofibromatosis included in the authors' study, in 97 some skeletal abnormality was demonstrable on the radiographs. Certain types of these skeletal defects are characteristic of neurofibromatosis, and their occurrence should suggest the possibility of this disease to the radiologist. The characteristic defects and their occurrence in the present study are as follows: severe angular scoliosis with dysplasia of the vertebral bodies (14 cases); defects of the posterio-superior orbital wall (13 cases); disorders of growth of bone associated with elephantoid hypertrophy of overlying soft tissue (18 cases); congenital bowing and pseudoarthrosis (four cases); erosions of bone caused by contiguous neurogenic tumours (36 cases); intrathoracic meningocele (one case, unproved). Evidence of at least one of these characteristic skeletal changes was exhibited in 74 cases (39%). Other skeletal defects commonly seen in patients with neurofibromatosis, although not characteristic, may represent a manifestation of the mesodermal dysplasia. Many congenital anomalies occur with neurofibromatosis; the present study included 33 examples. Mild scoliosis occurred in 14 patients, and four others had scoliosis from causes other than neurofibromatosis. A total of 32 instances of scoliosis was noted in this study, or 17% of the entire group. Intraosseous cystic lesions are frequently included as one of the characteristic skeletal abnormalities in neurofibromatosis, but in view of the rarity of true intraosseous cysts caused by intraosseous neurofibromas, the authors suggest that such lesions should be deleted from the list of characteristic skeletal changes.

SPINA BIFIDA OCCULTA WITH ENGAGEMENT OF THE FIFTH LUMBAR SPINOUS PROCESS. C. E. de Anquin, *J. Bone Jt Surg.*, August, 1959.

SPINA BIFIDA OCCULTA may be associated with low back pain, because of the absence of the first sacral spinous process and the ligaments that normally run between it and the spinous process of the fifth lumbar vertebra. In the normal spine extension is often limited by the apposition of the fifth lumbar and first sacral spinous processes; in the absence of the latter there may be hypermobility in extension, and this may itself cause low back pain or sciatica. The author seeks to show that pain can be caused in spina bifida occulta by the impingement of the spinous process of the fifth lumbar vertebra either on the stumps of the laminæ of the first sacral vertebra, or on the fibrous band that lies between the stumps. Certain factors such as an unusually horizontal sacrum, an abnormally long fifth lumbar spinous process, or lax spinal ligaments, may make this more likely to happen. The author has observed this process in 15 patients, and states that it is to be distinguished from hypermobility alone as a cause of pain. He considers that in extreme cases it may be possible for the fifth lumbar spinous process to compress the nerve roots in the cauda equina through the occluding membrane. Occasionally a rudimentary and mobile spinous process of the first sacral vertebra is pressed upon and in turn presses into the dura and underlying nerves. There are two different types of symptoms, depending on whether or not there is nerve root compression. (i) The more common type is probably spina bifida with impingement of the fifth spinous process without root compression. In spinal extension this provokes a pain in the lumbo-sacral region that can radiate towards one or both lower limbs. The pain is deep and diffuse, and there is no loss of reflexes, sensation or mobility. The most important clinical sign is pain produced by pressing on the fifth lumbar spinous process and hyperextending the spine, especially with the patient standing. (ii) The second type is spina bifida with impingement of the fifth spinous process with root compression. Although theoretically the possibility of compression of the cauda equina by the fifth spinous process pressing through the fibrous membrane is obvious, only two of the author's patients showed signs of nerve root irritation.

Three different radiological types of this anomaly can be recognised. In Type I there is a wide breach in the sacrum, with the fifth lumbar spinous process projecting over it; in Type II the breach is small and the spinous process engages the stumps of the spina bifida; in Type III there is a loose bone that represents the rudimentary first sacral spinous process. Excision of the fifth lumbar spinous process and the membrane across the breach of the spina bifida is an effective method of treatment.

The Wider View.

WHO — TEN YEARS IN THE WESTERN PACIFIC.

THE Regional Office of the World Health Organization for the Western Pacific was established in Manila, Philippines, on July 1, 1951. The region stretches from Japan in the north to Australia in the south and from Tahiti in the east to Malaya in the west. It is inhabited by 872,000,000 people. The following information, made available by the Regional Office, summarizes the health progress made during a decade of activity in the Region.

Since 1951 WHO has completed over 50 national health projects and 25 inter-country health programmes in the Western Pacific. Almost a hundred projects are in operation at present, with UNICEF, other United Nations' agencies and bilateral agencies participating.

Over 20 million people were tested for tuberculosis and 11 million vaccinated with BCG in Brunei, Cambodia, Hong Kong, Malaya, Sarawak, the Philippines, China (Taiwan), Netherlands New Guinea and Singapore.

A total of 16,061,692 people have been examined and treated by WHO and UNICEF-assisted yaws teams in Cambodia, Laos, Malaya, Netherlands New Guinea and the Philippines. Nearly half a million people living in South Pacific Island territories have been cured of yaws. In the British Solomon Islands Protectorate, 14·7% of the people were suffering from yaws in 1956; in 1959, the incidence of yaws was only 0·13%. In Western Samoa, the incidence of yaws dropped from 10,000 cases in 1955 to less than 10 in 1959. In Laos, the prevalence of active yaws dropped from 7·3% to 0·2% as a result of a mass campaign from 1953 to 1959. A year after treatment, the incidence of active yaws dropped from 10·01% to 1·56% in Cambodian villages.

A school health programme was started in Cambodia in 1953 by a team of WHO nurse educators. In 1960 the programme covered 22 schools with a total of 11,303 children. Five hundred schoolteachers from 31 primary schools have attended courses on health education, nutrition and school health.

Over two million schoolchildren and their 500,000 family contacts and 140,000 aborigines were treated for trachoma during a two-year mass campaign in Taiwan. UNICEF provided the antibiotics and WHO the technical supervision.

A highly-qualified teaching force in nursing was established in Japan after a three-year WHO-assisted nursing programme. Fifty-nine clinical instructors and 38 midwifery instructors were trained, and six fellowships for study abroad were awarded by WHO. Refresher courses for nurses and midwives and nursing workshops were conducted by WHO nurse educators in the Federation of Malaya from 1950 to 1958. Ninety-four nurses completed courses in public health nursing.

Three and a half million people were examined for venereal disease in Taiwan. UNICEF and WHO assisted the campaign, which resulted in a drop of the venereal disease rate from 7·3% in 1954 to 3·7% in 1960.

Smallpox continued to decline, and its eradication is vigorously pursued by many countries in the Western Pacific. With the help of WHO, Cambodia in November, 1959, started a national eradication campaign. By December, 1960, over 50,000 people had been vaccinated. Some 7,000,000 Koreans had been vaccinated against smallpox by the end of 1960. In Viet Nam, 80% of the population was vaccinated against smallpox, and the incidence of the disease dropped from 3564 cases in 1954 to 12 in 1959.

Over 4000 hilots (traditional birth attendants) were trained during a five-year WHO-assisted midwifery project in the Philippines. In three years (1955-1958) trained hilots helped persuade some 60,000 mothers in remote Philippine villages to visit rural health centres for health checkup.

In recent years, countries in the Western Pacific have attributed economic improvements to malaria eradication work. Within a period of seven years, rice acreage in the Philippines increased by 20% and other grain-producing acreage by 28%. Road construction linking new settlers was stepped up, and the lumber and fishing industries have been revitalized. Eradication of malaria in Taiwan has helped push through the construction of trans-island highways. Land development and extensive forestation programmes are now possible. In the previously underpopulated province of Cham in Cambodia, the population has doubled between 1955 and 1960, and land value is now 50 times higher than in 1955.

In Japan, WHO contributed to a solution of the public health problems created by the traditional practice of using refuse and human waste as agricultural fertilizer. WHO sanitary engineers helped design, construct and operate a pilot composting plant in Kobe City to produce safe and hygienic fertilizer from refuse and night-soil. With the success of the Kobe experiment, ten other cities in Japan started work on composting plants. Composting plants are also operating in Seoul, Korea, and in some cities in Taiwan. A pilot plant was established for the City of Manila, which also has considerable environmental sanitation problems. Several smaller communities in the Philippines are planning to set up composting plants, and the City of Saigon, Viet Nam, will soon have one.

At the first session of the WHO Regional Committee in 1951, a delegate from Korea submitted a health report which stated, among other things, that "leprosy is difficult to cure" and "we will *never* be able to stop the spread of the disease until we *segregate* the sick from the healthy population". In 1959, the Ministry of Health and Social Welfare of Korea reported that leprosy mobile clinics established in 1956 "are carrying out early case finding, epidemiological survey, treatment of patients in colonies, leprosaria and *homes*, and health education is conducted".

Almost 50 consultants and lecturers have been assigned by WHO in seven medical institutions in the Region to strengthen medical education and training activities. Over 700 fellowships and grants to health workers have been awarded since 1951.

Congresses.

NORTH QUEENSLAND MEDICAL CONFERENCE.

THE Fourth North Queensland Medical Conference was held at Rockhampton in July, 1960, with Dr. J. F. Gillogley as President and Dr. J. H. Learmonth as Honorary Secretary.

Inaugural Meeting.

The Inaugural Meeting was held in the School of Arts, Rockhampton, at 8 p.m., on Monday, July 25, 1960. Dr. J. F. Gillogley was in the chair. The conference was officially opened by his Worship the Mayor of Rockhampton, Alderman R. B. J. Pilbeam. The inaugural address was delivered by Sir Albert Coates.

Road Traffic Accidents.

PROFESSOR W. R. BLUNDEN (Sydney) read a paper entitled "The Nature and Control of Road Traffic Accidents" (see page 337).

The Flying Surgeon Service.

DR. C. F. A. CUMMINS (Longreach) read a paper entitled "The Flying Doctor Service" (see page 341).

Inflammatory Tumours Simulating Carcinoma.

DR. I. A. LESTER (Cairns) read a paper entitled "Inflammatory Tumours Simulating Carcinoma: An Account of Four Cases" (see page 344).

Tonsils and Adenoids.

DR. R. PALMERSTON RUNDLE (Townsville) read a paper entitled "Some Remarks on Tonsils and Adenoids" (see page 347).

Thyroid Disease.

DR. T. S. REEVE (Sydney) read a paper entitled "Current Trends in the Management of Thyroid Disease" (see page 348).

Venous Ulcers of the Legs.

DR. K. J. J. DORNEY (Townsville) read a paper entitled "The Treatment of Venous Ulcers in the Legs" (see page 350).

Injuries to the Elbow in Children.

DR. G. J. DOUGLAS (Townsville) read a paper entitled "Injuries to the Elbow in Children" (see page 353).

The National Health Service.

A symposium on the National Health Service was presented by DR. D. A. HENDERSON (Brisbane), DR. J. R. ADAM (Brisbane) and DR. R. F. O'SHEA (Brisbane).

Dr. Henderson discussed national health services in other countries. He said that a national health service, implying organization, on a national basis, of all the services promoting the health of the community, was a tremendous undertaking. It involved organization of the medical care of the individual, both in and out of hospital, public health and hygiene measures, teaching and research, dental care and a host of other auxiliary services. He proposed to discuss only some aspects of the organization of the medical care of the individual outside hospital. Even so, there would be broad generalization and over-simplification. The original title of the symposium had been "The Practical Doctor looks at the National Health Service". He took the practical doctor to represent the majority of the medical profession—doctors concerned with practising good medicine under the arrangement of private practice—and would attempt to consider some aspects of organized medical care in other countries which were of immediate interest to him.

With the exception of Great Britain, it was difficult to obtain comprehensive accounts of the organization of national health in countries throughout the world. However, enough material was available to present the broad picture in New Zealand, Denmark, Sweden, Canada and the United States of America, as well as in Great Britain. The first outstanding fact was that all those countries had organized medical care in some degree or other. It was obvious that there must be some basic factor responsible for such a development in so many independent nations. That factor was the result of the interaction between two phenomena. The first was the belief on the part of the people themselves of those countries that every individual in the community was entitled to the best of medical care. That belief was independent of nationality, language or politics, and it was clear that access to good medical care was a basic human right. The other phenomenon was a financial one. Everyone knew that during the previous 50 years medical care had become much more effective, but at the same time, much more expensive. That added cost had operated to prevent the correct distribution of medical services in the community, and when those services were available, to put them beyond the easy reach of a significant proportion of the population. At that stage, the practical doctor would reflect that there must be some community arrangements for medical care on the grounds of cost, and would consider that the medical profession, in common with everyone else, was obliged to support and promote that principle. He would then examine the state of affairs in the other countries, to find out what general type of system had been established to deal with the problem of cost. He would find out whether private enterprise had been able to cope by means of voluntary insurance schemes, or whether government participation in some degree was essential.

Voluntary insurance schemes of a type had operated in Great Britain since early in the century. They had provided for a proportion only of the population—the working class—and had proved quite inadequate to cope with modern medical costs. They had been unpopular with both patient and doctor, and, because of the general economic state of the country, it appeared unlikely that any voluntary form of medical insurance would have solved the problem of national costs. The present National Health Service had come into being in 1948. It was entirely financed and administered by the Government. In Denmark voluntary insurance covered all the population requiring help with medical costs, and had been in existence since 1892. The insurance societies were subsidized by the State. Sickness insurance in the United States of America was entirely voluntary and not subsidized by the State. It covered, in some form or other, mostly for hospital expenses, two-thirds of the population, but many people still suffered real financial hardship in paying for medical care. There had been a number of unsuccessful attempts by governments to organize national health services in the past. Dr. Henderson said that, in his opinion, in view of the large proportion of the population not covered by insurance, the organization of national arrangements with government participation would occur in the not-far-distant future. Eight million of a total population of 17,000,000 people in Canada were covered by some form of voluntary insurance. Public funds played no part in financing the schemes for medical care outside hospitals, but Dr. Henderson again predicted eventual government involvement to assist the large part of the population which remained uninsured. New Zealand and Sweden had no major voluntary insurance schemes. In both countries, public funds were used to pay part of the citizen's medical bill. The New Zealand scheme had been badly planned on a purely political basis, with little heed of the medical needs of the country. Modification seemed to be inevitable. It thus appeared, from a study of conditions in those countries discussed, that voluntary insurance could provide adequate cover of the costs of medical care to a large part of the population, particularly in countries with a high standard of living. It was also clear that, even apart from special groups such as pensioners, government finance was necessary to obtain a complete cover for all. The nature and extent of that participation would depend on the politics of the party in power at the time, and on the success of the medical profession's efforts to influence it.

The practical doctor would want to know next what had been the effect of the various schemes upon those things which he considered essential for the best treatment of his patients, and essential in order that he, himself, might live an effective and satisfying life. He would want to know how the medical practitioners in those countries had fared in relation to their professional freedom, their personal liberty and their financial status. Under professional freedom he would consider the doctor-patient relationship, with free choice of doctor by patient and vice versa, the availability of X-ray and pathology services, facilities to care for his own patients in hospital and freedom to prescribe as he thought in the best interest of the patient. The doctor-patient relationship had remained intact in all countries. Its supreme importance in the practice of medicine had been recognized, but the added certification of a patient's illness, required by most systems, made some inroads into its confidential nature. Both practitioner and patient had ready access to X-ray and pathology services in all countries, but the opportunity of treating his own patients in hospital was denied the doctor in some countries. In Great Britain, for example, practically all hospital treatment was carried out in non-private hospitals, which were organized with their own staffs. The practising doctor was unable to treat his patient in hospital. Denmark, which had a voluntary insurance scheme for general medical services, also had a salaried staff in its hospitals, with no right of entry for the patient's own doctor. A similar salaried hospital staffing existed in Sweden. That state of affairs, which was undoubtedly detrimental to the standard of practice outside the hospitals, appeared to be partly the result of efforts to maintain the financial efficiency of the hospital service. In New Zealand, Canada and the United States of America, doctors treated those of their patients who desired and could afford it, in private hospitals. The practical doctor would note with interest the manner in which voluntary insurance organizations might influence medical practice, as was well exemplified in the United States of America. Many of the insurance schemes had contracts with hospitals to treat their members. A doctor not on the visiting staff of the hospital contracted to treat his insured patient would be unable to look after him in hospital. Similarly, scheme contracts might restrict the doctors available to an insured patient for treatment outside hospital.

Prescribing under national schemes was restricted to scheduled drugs in New Zealand, Denmark and Sweden, but was unrestricted in Great Britain, Canada and the United States of America. It was interesting that the completely socialized profession in Great Britain had complete freedom of prescribing. Thus professional freedom had been restricted to some extent, varying in degree in different countries.

The aspect of personal liberty with which the practical doctor was concerned at the moment was the ability to make his own decision, within the limits of his capabilities and the conditions of supply and demand, as to where he would practise, what type of practice he would adopt and when he would make a change. In Great Britain, with its

fully socialized medicine, personal liberty in that sense was very considerably restricted. The administration was concerned with developing what it considered to be the correct distribution of medical services, and accordingly regulated the commencement and change of practice. Practices could not be sold, and entry into practice in a district was obtained only through application to the local executive council. Specialist practice scarcely existed outside the National Health Service, and once a doctor had obtained any seniority in the hospital service it was practically impossible for him to enter general practice. In New Zealand, Canada and the United States of America the doctor retained that liberty, although it was interesting to note the possible restriction that could result in communities with the type of voluntary insurance which contracted with doctors to treat insured members. Personal liberty could be very considerably restricted by the introduction of national health schemes.

In considering the financial status of doctors in the countries under discussion, the practical doctor would want to know the method of remuneration, whether it was adequate and whether the method was readily adjustable to allow for increases in the standard of living of the community and for inflationary trends. General practice in Great Britain was remunerated on the basis of a capitation fee of 17s. 6d. per patient on a doctor's list, with an extra 11s. 6d. for patients between 500 and 1500 on his list. The maximum number of patients permissible was 3500. The average earnings of general practitioners in 1955-1956 had been £2058 (sterling), in comparison with dentists (£2127), accountants (£1350), actuaries (£1940) and solicitors (£1750). Specialists were paid salaries, the basic salary for a fully-fledged consultant being £2300 at age 32 years, with age increments. About 40% received distinction awards of from £500 to £2500 per year. The profession in Great Britain had been very dissatisfied with the remuneration, on the grounds that it had always been inadequate and that there had been no satisfactory method of adjusting it to general community costs. That belief had been recently supported by a Royal Commission. The reason for the defects lay in the complete control exercised by the Treasury.

In New Zealand, a fee-for-service plan was in operation, the essence of which was that the State paid a benefit of 7s. 6d. per service, or 12s. 6d. for night and holiday services, to help the patient pay his bill. The doctor charged extra up to the amounts of 12s. 6d. and £1 recommended by the British Medical Association. No extra provision was made for specialist services. The State's contribution was usually paid direct to the doctor on the production of a list of the patients he had treated during the month. The State paid £8 8s. for routine obstetrical care, which the doctor had to accept as his full fee. The amounts had not been changed since 1941. On the figures available, it appeared that the average earnings of practitioners in New Zealand were about £3500-£4000 (New Zealand). The profession seemed to regard that as satisfactory, some adjustment having been achieved by an increase in the proportion of the fee paid by the patient. However, the practical doctor would note that, according to official government figures, there had been some inflation of practices by over-visiting as the number of doctors in the dominion increased. If it continued, that would obviously produce some restrictive administrative action. Denmark had instituted a fee-for-service system for practitioners outside hospital, the whole amount being paid by the insurance organization to the doctor. The amount of the fee was negotiated by the Danish Medical Association and the insurance societies. The arrangement worked satisfactorily, although on occasions the societies had proved as hard in negotiation as any government. The average income of general practitioners from the societies was given as £2000-£3000 (sterling). That, together with income from some other minor sources, resulted in a net income equivalent to that of "one of the higher civil servants". Sweden had introduced a fee-for-service system in 1955, three-quarters of the fee being refunded to the patient by the Government according to a schedule. The doctor had been free to charge what he felt to be justified but, in general, had been expected to keep his fees in conformity with the schedule. Dr. Henderson had no reliable recent information upon the working of the scheme and the attitude of the profession to it.

Canada was in the process of organizing a national health service based upon voluntary insurance. The insurance plans sponsored by the medical profession were coordinated throughout the country. The full amount of the doctor's fee was paid direct to him by the insurance organization on a fee-for-service basis. The fees to be paid for different services were fixed by negotiation between the provincial medical association and the insurance plan. The doctor entered into a contract with the insurance plan to treat the patient for those conditions for which he was covered. An interesting feature, illustrating the importance which the profession attached to the maintenance of solvency of the insurance plans, was the inclusion in the contract of a clause to the effect that, in the event of an epidemic or other unforeseen circumstances, the plan might pay less than the prescribed fee, upon a pro-rata basis, depending on the money available. Dr. Henderson said he had been unable to obtain information on the income of Canadian doctors, but they seemed to be satisfied with the arrangements. Medical care of the type under discussion was less organized on a national basis in the United States of America than in any of the other countries mentioned. Many independent organizations offered voluntary insurance in a wide variety of forms. Insurance against hospital expenses was much more widespread than that for general medical care, although the popularity of the latter was increasing. In the Blue Shield scheme, sponsored by the profession, payment was on a fee-for-service basis for the lower income group of insured patients. The doctor contracted to accept the plan's payment as full reimbursement for the service. As in Canada, doctors agreed to accept less than the stated amount in the event of an epidemic. The indemnity system was similar to that in Australia, whereby the patient received a certain amount towards the doctor's fee, whatever that might be. It was applied to the higher-income group of insured patients. In 1949 the average net income of doctors in the United States of America had been $11,744, in relation to $7146 for dentists and $8083 for lawyers. Dr. Henderson said he had no current figures, but had seen no published complaints that American doctors were inadequately paid. The American voluntary insurance schemes appeared to be satisfactory as far as they went, but it was clear that a considerable proportion of the population remained uncovered. Dr. Henderson said he believed that entry of the United States Government into arrangements for financing medical care was inevitable.

Dr. Henderson concluded by saying that the practical doctor would note with approval the positive, constructive attitude of the medical profession in some countries, particularly North America, towards the universal problem of the cost of medical care. He would see that that cost could be subsidized on a national basis by the government, while the personal and professional freedom of the medical practitioner was preserved. He would recognize that, in order to maintain those liberties, the profession must assume the responsibility of keeping costs as low as was consistent with the highest standard of medical care, and he would be of the opinion that the best scheme for the doctor, the patient and the taxpayer was one financed by a combination of voluntary insurance, government subsidy and direct payment by the patient, with remuneration of the doctor on a fee-for-service basis.

Dr. Adam discussed the National Health Service in Australia. He said that the Federal election in 1949 had had a particular interest for the people of Australia and the medical profession. The Government had proposed a national health service based on the British scheme. The Opposition had promised a national health service free of socialized regimentation. The Liberal-Country Party coalition had been successful, and the Government had remained in power since 1949. The Minister of Health in the new government had been Sir Earle Page, a man with many years of medical experience and of politics. His health plan had covered a wide field, and Dr. Adam proposed to discuss certain aspects of it. The Minister had described the Government's plan as a partnership of the Government and the individual, and the union of the Government with voluntary effort. The great advantage of the plan had been that it had not disturbed past practice, but had stimulated progressive, orderly evolution of better standards.

Formerly, people in receipt of old-age, invalid or widows' pensions had been dependent on the generosity of the medical profession or had sought treatment in public hospitals. The Pensioner Medical Service had commenced in 1951. It had been a family doctor's service on a fee-for-service basis, and the Government had accepted the full liability for meeting the cost. The profession had agreed to treat people for a concessional fee. In the years of operation the scheme had worked very well. The Government had considered the yearly rise in the cost as being reasonable. The pensioners were happy with the arrangement, which allowed them a free choice of doctor, and the profession's only complaint was that the fee was too low—in other words, it did not bear the same relationship to existing general practice fees as it had done in 1951.

So much had been accomplished by the doctor-patient relationship that an improvement in the plan could have been the extension of community hospitals in suburbs where pensioners requiring admission to hospital for medical and minor surgical procedures could be treated in their own district and by their own doctor. With the establishment of a special account in the hospital section, it should have been possible for hospital care to approximate 36s. per day, which would represent an enormous saving when compared with the £4 to £5 per day in the larger public hospitals. A consultant service on a fee-for-service basis or on a sessional basis would be necessary, and Dr. Adam said he was sure that the people would appreciate that, and that it would bring the general practitioner, with his knowledge of the patient, his circumstances and his past medical history, into that patient's hospital care.

The Hospital Benefits Scheme, commenced in 1952, had proposed a payment of 8s. per day for every patient in a registered hospital. If the patient was a member of an approved hospital benefit fund, the Commonwealth would pay an additional 4s. towards hospital charges. There had been some improvements in that and at the present time, if the patient was insured in a table which was equivalent to a 16s. per day benefit, the Commonwealth would pay an additional sum of 8s. per day. Hospital funds had found it necessary to exclude contributors with preexistent and chronic conditions. The Government had assisted that group of people considerably by amendments to the *National Health Act*, and by the creation of a special account. The machinery had been to create a special fund guaranteed by the Government, in which the contributors' subscription was paid and payments were made by the organizations from that fund. The contributors in that special account might receive 36s. per day as a maximum, indefinitely if necessary. The scheme had proved attractive to the majority of Australians. The percentage of the population covered varied in different States, but it was estimated that 70% of the population in Australia was covered for hospital benefits. In Queensland, in December, 1951, 13,000 people had been members of hospital funds, representing 2% of the State's population. By the end of the previous year that figure had risen to 53%, with a coverage of 760,000 persons. The difference in the percentage of people covered between Queensland and the other States was obviously due to the free public hospital system in Queensland.

The Commonwealth had adopted a schedule of benefits which included almost every service the medical profession could render, and had stipulated that any medical benefits fund seeking registration with the Commonwealth scheme must at least match from its own fund the benefits payable by the Commonwealth. Since 1953 there had been slight changes in the Commonwealth schedule. The funds carried the cost of administration of that scheme. Sir Earle Page had stated that the Commonwealth subsidy plus the fund benefit should approximate to between 80% and 90% of the prevailing fees. The funds had found that contributors joining with preexistent conditions and chronic diseases had had to be excluded from fund benefit, although Commonwealth benefit had been payable. Some funds at present allowed medical expenses for preexistent conditions after two years' continuous membership. The position of people with preexistent conditions and chronic diseases had improved immensely by the creation of a special account similar to the one in the hospital section. In 1953 in Queensland, membership of registered organizations had totalled 29,000, representing 6% of the population. In December, 1959, there had been an estimated coverage of 54% of the population. That was also the lowest in the Commonwealth, the average being 70%. Again the reason for the position in Queensland lay in the free-hospital policy in that State. If at any time there was a change in the State policy concerning free hospitalization in Queensland, or if a means test was introduced on the same basis as that for dental treatment in the State, the number of insured persons would almost certainly rise to 70% of the State population. When the various types of pensioners covered by the Pensioner Medical Service and Repatriation Department patients were taken into consideration, 75% of a population covered by medical insurance was probably the maximum that one could expect.

Dr. Adam said the present position could be stated in summary from the points of view of the Government, the people, the funds and the profession. The Government was satisfied with the general operation of the schemes. It watched the funds' financial position very carefully, particularly the administration costs, and was reluctant to allow funds to introduce new tables giving higher fund benefit for a higher premium, or to increase greatly the Government subsidy. Just how much that was due to the Treasury, which had noted the considerable rise in the costs of the pharmaceutical benefits, he did not know; but it had greatly exceeded the estimates of the Health Department, and unless it was going to dominate the whole National Health Scheme it had to be changed. If a satisfactory pharmaceutical scheme could be found, it seemed certain that the Government would be in a position to make further improvements in the National Health Service.

The coverage of people in other States varied from 80% in New South Wales to 60% in Victoria, and there was no doubt that to the vast majority of the contributors the scheme was popular. It gave them complete freedom of choice and, in the main, freedom from worry for medical expenses. However, it should be noted that there had been little change in the average cost for service, and the percentage met by the members varied between 30 and 37 in the different States. Seventy-five *per centum* of all services rendered were for general practitioner attendances. There had been a slight rise in the number of services per member per year, but that had been expected, and it had been the hope of the Minister that members would seek earlier medical attention for themselves and for their families. The biggest change that was required as far as the people were concerned was that the Commonwealth subsidy and fund benefit should be closer to the fee for major surgical procedures. There had been some improvement in the preceding year for certain items on the schedule, but there was still too big a gap, and it was desirable for the Commonwealth and fund benefits to approximate 75% of the common fees for major surgical procedures. That would allow the surgeon to think in terms of an intermediate fee, and if he was not prepared to reduce his fee, to recommend the patient to a competent junior, who would be happy to render the service for a lesser fee. The Government might be able to bridge that gap by paying an increased subsidy, and allowing the funds to increase their benefit when services were performed by a specialist practising full-time in his specialty.

The medical and hospital funds had rendered an efficient service to the public. Their administration costs were low, and 85% of contributions were returned to contributors. The surplus for any year's trading recently had been small, which had led to the introduction of new tables in medical and hospital sections. A large difficulty in Queensland was the low coverage of the population, and it was difficult to see how that would improve with the present State hospital policy. Workers' compensation in Queensland was a Government monopoly, and employers were obliged by law to pay a certain amount every year for employees. Some of that money represented hospital and medical costs for insured workers, and if that portion could be paid by the employer into a group scheme of any fund, it would mean that all the employed people in Queensland would have an adequate cover. The State would gain by a charge for hospital accommodation, the employee would gain in that he would be covered, not only for accidents at work, but for all injuries and illness. If he was married, it would be his responsibility to insure for his family. An improvement could also take place, but not to the same degree, if every holder of a motor-cycle licence, and for that matter a motor-car licence, produced evidence of membership in a registered organization. The savings to the State if charges were made for treatment and hospitalization of motor-accident victims would be considerable.

Doctors enjoyed professional freedom and personal liberty. Their financial status had been improved. Dr. Adam said one should remember that the Government might at any time exercise a greater control on all the operations of the scheme. There was also a limit to the Government expenditure on all health services, and there was a limit to the premiums insurance organizations could ask from the bulk of their members. If a minority of doctors abused the pensioners' scheme or, by over-visiting and lack of care in the use of hospital services, threatened the financial position of the funds, some changes of a restrictive nature were inevitable, which would unfortunately involve the whole profession. The Federal Council of the British Medical Association in Australia, subgroups and local associations should all be ready to assume responsibility for the success of the scheme and to deal effectively with the minority who threatened it. If this was done, and if an increased subsidy could be obtained which would be a benefit to the patient and reduce his percentage of medical costs, Dr. Adam said he would agree with Sir Earle Page, who had predicted that that conception of a health service might well be the one the democracies were seeking.

Dr. O'Shea discussed pharmaceutical benefits. He opened his remarks by quoting Oliver Wendell Holmes who, in 1860, had been able to say that except for opium, a few specifics, wine and the "vapours which produce the miracle of anæsthesia, . . . I firmly believe that if the whole materia medica as now used could be sunk to the bottom of the sea, it would be all the better for mankind, and all the worse for the fishes". He said they might now rephrase Osler, and claim that they had firm faith in a "multitude of well tried drugs and have many great remedies". During the present century there had developed a social revolution. It was accepted by all that each person in the community could expect that his work would secure for him and his family enough to eat and a home and moderate comforts; that he would have leisure and holidays; that he would have the best medical care available when sickness came; and that when he could work no longer he could claim and receive a pension. It was against that background of the social revolution and the therapeutic one that they should view the problems of pharmaceutical benefits.

The pharmaceutical industry had a past record of high ethical standards, expensive research programmes, generous support to research projects in universities, hospitals and institutes, amiable cooperation in clinical research with the supply of new drugs for pilot studies, solution of the problem of safe mass production of drugs (for a failure there meant death, as in the notable exception with Salk vaccine) and the marketing and advertising of the new products. The future of the industry was now based on the constant development of new products, and it had been well said that "the pharmaceutical industry lives in the shadow of its own obsolescence". The rewards of research were new drugs, and the industry had a right to expect the new drugs to be available to the profession, provided they were effective and were safe compared to the risk of the disease. For example, an antimitotic drug was dangerous, but cancer was lethal. The restricted testing of drugs by a government, and economic discrimination between drugs of the same class carried a risk that only the cheap drugs would be tried. That problem concerned all of them, for there was no doubt that the Government was obsessed by costs of pharmaceuticals. The industry, on the other hand, had a responsibility to the profession to make claims based only on solid evidence, to present fairly the risks of the new treatment, and to avoid loss of prestige by adopting modern hard-sell advertising methods to promote a new, unproven product. The other difficulty facing the industry was how to solve the problem of producing necessary but uneconomical drugs, such as stone-fish antivenine, and there was a field for the government-supported institute such as the Commonwealth Serum Laboratories.

The rôle of the doctor in the therapeutic revolution was a difficult one—especially for the general practitioner, who must be "all things to all men", as the new knowledge created problems. The sheer volume of the knowledge, and the hours of study needed to become familiar with new drugs, their use, side effects, dangers and contraindications, had been a problem in an age when increasing demands were made on a doctor's time and when the lower rate of fee relative to wages had enabled more people than ever to consult doctors. It was fair to say that almost all the pharmacology taught 20 years before was obsolete. It was fair to say that no doctor at the present time enjoyed the same amount of leisure as the labourer. In the choice of therapy the reasonable doctor would always select the most effective drug. The cost factor rarely entered the mind of the physician at the time of his decision as to the best drug. Once he had decided on the drug, the cost problem might then be discussed and the patient might need transfer to the government-supported hospital. The sensible physician would always use an orally administered preparation in preference to an injectable one, and a tablet in preference to a mixture. The wise physician would always try a new drug when the old ones had failed; and when the disease was lethal, as in neoplasms, and all accepted forms of therapy had failed, the physician would even seek to use the newest experimental product. The responsible physician would also respect the purse of the patient or the treasury by authorizing only the quantity of the drug needed for the treatment. Next the busy physician would desire to be spared from the excessive book-keeping of practice, preferring rather to write adequate clinical notes, to read journals and to capture some elusive leisure than to read the hundreds of regulations relating to prescribing (which were changed at frequent intervals) and to try to decipher the code letters, numbers of tablets and additions to and subtractions from the list.

The Government had come into the field of therapy but lately. Some regarded it as an intruder, others as the answer to their desire for the welfare State. Whatever one's views, the Government had certainly made a difference since it had entered the field and it appeared that it had come to stay. Its field had allegedly been to ensure that the drugs were available to all. It had chosen to do that by first making a few drugs free to all—to the poor, to the average and to the wealthy classes. It had also supplied a further limited list to the pensioners. What of the record since then? Having found that costs were rising, it had begun to try to treat that by the wrong remedy. It had sought to limit prescribing by a host of regulations, by reducing quantities, by restricting some drugs to certain diseases, by delaying the introduction of new, proven remedies, by discriminating between equally effective drugs on a price basis and by blaming doctors for choosing expensive drugs instead of cheaper ones. That first aid had failed, and costs had risen and so had come more severe measures; but again the cause had been wrongly diagnosed and treatment would fail. The Government had tried self-medication, and had not asked the advice of the profession when it had brought in the new schedule. To change the metaphor, one might say that the new schedule had been conceived out of wedlock, experienced a secret gestation and come to delivery in September, 1959; the labour had been complicated and delayed, and the infant had been born in March, 1960. The betrayed profession had taken one swift look at the schedule, and decided there were so many congenital abnormalities that euthanasia was desirable. However, compassion had prevailed, radical surgery had been undertaken, and a patched-up list had appeared in June, 1960. However, the infant was still dangerously ill.

Specific complaints might be made. It was a restricted list and thus placed economic sanctions on prescribing. The doctor had been denied all discretion as to the quantity, the form in which the drug was dispensed, the size of tablet and the number of repeats. The list was notoriously incomplete. Prescribing was controlled by a multitude of regulations relating to disease and limitation to children and pensioners. The farcical necessity existed of writing to the Director-General of Health for his permission to use a particular drug for a patient he had never seen. The five-shilling charge was a direct tax, falling more heavily on the chronically ill than on others, and the chronically ill could least afford the increased tax. The five-shilling charge had prevented patients from returning to the doctor unused quantities of drugs for use in the treatment of other patients. The list was always out of date. New, proven remedies took months or years to pass the committee and appear on the list. The profession's clerical work had been vastly increased. There was some evidence that there had been an attempt to reduce the quantities allowed, to ensure that the cost was approximately 5s., and there was even the strange anomaly that some drugs in the list were cheaper by ordinary prescription.

Dr. O'Shea asked what advice could be given to the Government. First, the profession should suggest that no one deserved something for nothing, or, as Lloyd George had it, "ninepence for fourpence". The people who most needed help in paying for pharmaceuticals were those on average incomes with long-term illnesses, and those who needed expensive remedies. All restrictions on the doctor's choice were a barrier to the practice of good medicine. Dr. O'Shea said that he thought there should be formed a commission to examine the question of pharmaceuticals from all angles—those of the patient, the general practitioner, the specialist and the pharmaceutical industry — and that commission should take evidence in towns, in hospitals and in the country. It should try various pilot studies in various schemes, from low-cost drugs for all to voluntary insurance schemes to pay for drugs, and then a sensible, simple, working scheme might be born. For the present, he did not think the doctor should be loaded with the extra book-keeping of the existing scheme. He thought the financial side of the scheme should be solved in the pharmacy or by refunds to the patients by the Government.

The profession had been obliquely blamed for the rising costs. The profession's labours had reduced the infant mortality rate, prolonged life, saved the country thousands of lives, reduced suffering and time lost from work and contributed in a large measure to the booming economy, and those things had received scant recognition from the Government. But when the drugs which had made possible that magnificent victory over disease cost £20,000,000, there was a veritable alarm sounded from Canberra. Yet that same Government had collected £105,997,000 from the excise

on beer alone, and the total tax collected in 1957 to 1958 had been £1,161,533,000.

Recent Advances in Cardiology.

DR. GRAEME SLOMAN (Melbourne) discussed some recent advances in cardiology. He said that spectacular advances had been made in cardiac surgery with the employment of safe cardio-pulmonary by-pass. Keeping pace, there had been great progress in the diagnosis and management of all forms of heart disease. Severe systemic hypertension could now be managed more successfully with combinations of drugs. The œdema of heart failure could be controlled with oral therapy. Coronary artery disease still presented many problems, but the advent of safe coronary angiography might show a way to further progress. A better understanding of the non-coronary forms of myocardial disease was emerging, and that might lead to advances in the knowledge of the biochemistry of heart muscle. Using drugs, one was able to stop the heart for a number of seconds and then restart it using other drugs or a special electrical device. Such cardiac stimulation had a direct application in the treatment of frequently recurring Stokes-Adams attacks. The clinical assessment of patients with heart disease had become even more fascinating. The signs so carefully recorded in the past could now be checked and correlated with the heart's function, thus permitting a more accurate bedside diagnosis. Advances in electrocardiography, radiology, phonocardiography and the measurement of intracardiac pressures and blood samples all played a part in making the complete diagnosis. The development of safe, non-toxic, radio-opaque contrast media together with special methods of rapid intracardiac injection, made it possible to obtain X-ray visualization of the heart defect before operation. Dr. Sloman illustrated these methods and discussed future progress, with particular emphasis on coronary artery disease.

Ætiology of Skin Cancer.

DR. G. G. CARMICHAEL (Brisbane) discussed various aspects of the ætiology of skin cancer. He said that it was generally conceded that ultra-violet radiation was responsible for the majority of cases of skin cancer in Australia, particularly in Queensland. That conclusion had been reached from epidemiological studies and animal experiments. However, the knowledge of the epidemiology was most highly developed in the United States of America, where it had been found that the incidence in 10 major cities increased systematically towards the Equator. The epidemiological studies had been somewhat disconnected in Australia, and the present investigation had been planned to look at the problem in Queensland from the State-wide point of view. From hospital records it seemed that the incidence rate did increase from south to north, but not to the extent found in the United States of America, where it was claimed that the rate doubled for every 3° 48′ nearer the Equator. However, too much weight could not be put on that comparison, as major American cities and their populations must have very little in common with Australian cities and their populations. The skin cancer incidence rate was not likely to be a simple function of the possible amount of ultra-violet radiation and the distance from the Equator. From an examination of the hospital records, it did not appear that there was any major difference in the number and types of lesions between the patients from different parts of Queensland.

A survey conducted by post amongst cane-growers on the coastal strip of Queensland had produced results that were consistent with the results obtained from hospital records. To correlate ultra-violet concentrations at different parts of Queensland, the Physics Department of the University of Queensland had installed measurement apparatus at Cloncurry, Townsville and Brisbane. Readings obtained so far indicated that the greatest amounts of ultra-violet energy were received at Cloncurry, and the least at Brisbane. That finding was in accordance with hypothesis, although the measurements would have to be continued for some time before exact results could be obtained. Knowledge of the action of non-ionizing radiations was not nearly so complete as that for ionizing radiations, but it was an important field for study, particularly as cancers could be produced regularly in experimental animals. The kind of work being done at the present time was essential groundwork for any exact correlations that were to be made concerning ultra-violet radiation and skin cancer in the future.

Out of the Past.

THE MELBOURNE CEMETERY.[1]

[From the *Australasian Medical Gazette*, March 20, 1903.]

IN the Melbourne Cemetery corpses have been interred so close to the boundaries that only 10 or 12 feet of space separates the graves from the street. The Board of Health regards this practice as a distinct menace to public health, and about 18 months ago it forwarded to the Cemetery Trust a resolution declaring that a margin of 40 feet round the enclosure should be kept free from graves. The Trust, however, declined to act in accordance with this resolution as far as the sides fronting Macpherson-street and the Park were concerned. The Minister for Health has directed Dr. Gresswell to write to the trust, informing that body that he is prepared to take any constitutional measures that is [*sic*] open to him to prevent further burials within the 40 feet margin. Short of passing a special Act of Parliament, there is only one course open to the Minister by which to compel the observance of his direction, and that is to suspend the trust.

Special Correspondence.

PARIS LETTER: JANUARY–FEBRUARY, 1961.

[FROM OUR SPECIAL CORRESPONDENT.]

Are Town Rats Healthy?

LARGE MODERN CITIES are inhabited not only by humans, but also by rats. Although it is difficult to estimate their numbers, it is thought that in certain large international ports the number of rats is equal to or greater than the number of inhabitants. The health of these four-footed citizens is important from the point of view of public health. In a special number of *Le Concours médical* devoted to city hygiene, H. Sapin-Jaloustre[1] presents the results of a study dealing with the health of Paris rats. One fact relating to the majority of them is outstanding: Paris rats are in good health. Only a few grandparents among them, weighing more than 300 grammes, showed small abscesses of the lung or the perirenal tissue, encysted parasites, or small inflammatory or scarred lesions in the liver; moreover, these unimportant abnormalities were excellently tolerated. More than 500 rats were examined; anatomo-pathological examination revealed no lesions of plague, and the blood specimens sent for examination to the Institut Pasteur gave no positive findings. On the other hand, *Leptospira icterohæmorrhagiæ* was found in 20% of the animals. In the rat this organism produces an unapparent "silent" disease, and microscopic examination showed that the spleen, liver and adrenal glands were normal in nearly all cases. Because of intermittent urinary elimination, human contagion is actually of slight importance only, although it must be admitted that true cases of the disease remain undiagnosed.

Thus it may be stated in conclusion that in Paris the dangers of plague, *Bacillus moniliformis* septicæmia and salmonella infections of the alimentary tract caused by rats are very slight. Only leptospirosis caused by *L. icterohæmorrhagiæ* is likely to be transmitted by these animals to any extent.

Anticoagulants and Cerebral Softening.

The use of anticoagulants in the treatment of the various thrombo-embolic disorders of the arteries has justified an investigation of their value in the treatment of cerebral softening, both in the early stages and as long-term prophylaxis against recurrences. The authors who have tried this treatment have come to rather different conclusions. In the opinion of J. Barbizet and Cl. Labram,[2] the effectiveness of anticoagulant treatment on the course of cerebral softening has not been conclusively established. They hold that there are several reasons why anticoagulants should not be used in the early stages of cerebral softening.

[1] From the original in the Mitchell Library, Sydney.

[1] *Concours méd.*, 1961, 1: 81.
[2] *Concours méd.*, 1961, 3: 297.

However, they think that prophylactic treatment to prevent recurrences may be begun at the end of the fourth week after the stroke. In some cases this period may be shortened, but never to less than two weeks. Long-term anticoagulant therapy should be instituted to prevent further softening in embolic diseases. It may also be undertaken, but rather less positively, in patients suffering from atheromatous cerebral softening. In any case, the general contraindications to anticoagulant treatment apply to this group of patients, and in particular such treatment should never be given to patients suffering from hypertension, from peptic ulcer and from various disorders producing changes in the blood vessels.

Circumstances Governing the Occurrence of Rickets.

The ætiological factors of rickets have been studied by M. Lelong, P. Canlorbe, J. Paupe, J. Colin, Cl. Gentil and G. Hennemanne[3] in 124 cases of hypocalcæmic rickets and in 106 cases of rickets with normal blood calcium levels. Inquiry into the family history revealed, in some cases, either a familial predisposition to disturbed calcium-phosphorus ratio, or, on the other hand, a personal make-up such as to render some infants vulnerable to the condition when they are subjected to a deficiency of vitamin D.

Before the age of 18 months boys are clearly more often affected, whatever the type of disturbance of the calcium-phosphorus ratio, but over that age girls are more often affected. The highest peaks of age incidence are found in the first three months for hypocalcæmia without rickets, between six and nine months for rickets with hypocalcæmia, and between nine months and one year for rickets with normal blood calcium levels. These different disturbances of calcium-phosphorus ratio are only rarely observed from June to September; if their highest incidence occurs in spring, they are also very frequent, particularly hypocalcæmia, in winter. In about 20% of cases, hypocalcæmia and rickets occurred in infants who had been breast fed for at least two months. Thus it appears that a number of every-day factors have combined responsibility for hypocalcæmic states and rickets, and they provide fresh evidence in favour of the theory that rickets is a deficiency disease.

The Treatment of Muscle Contractures in Paraplegics.

The dramatic sequelæ of paraplegia, and especially muscle contractures and bladder spasticity, are always of interest to those dealing with these severely afflicted people. M. Maury, R. Houdart, B. Audic and C. Lacombe[4] have tested subarachnoid injections of absolute alcohol as a form of treatment. Alcohol generally has a twofold mode of action; on the one hand it performs what amounts to a chemical rhizotomy by dissolving the myelin sheath, which is essentially made up of lipids surrounding the nerve roots; on the other hand, according to the depth to which it penetrates, it produces more or less complete fibrosis of the nervous tissue of the spine. In the authors' opinion, the most important indication for this treatment is provided by the paraplegic whose spasticity is so violent that it prevents all activity, or limits it considerably—the totally paraplegic patient who comes early for treatment. In such cases alcohol injection can be considered from the eighth or the tenth month. This is the most important indication for the treatment; but spasm of the bladder alone, without associated severe or troublesome muscle contractures, may be an indication to consider injection of alcohol. Bladder infection, which aggravates the reduction of bladder capacity due to the spasticity, and which may finally lead to irreversible contraction and sclerosis of the bladder, is an important argument in favour of this form of treatment. The alcohol is injected by lumbar puncture, the patient being placed in the head-low position to allow the solution to rise as far as the epidural space and to penetrate all the sacral tracts and, if necessary, the lumbar tracts and the lower part of the marrow. The injection is given slowly, at the rate of 1 ml. per minute; the quantity varies, according to the object of the treatment, between 3 and 15 ml. After the injection has been completed, the patient remains for six hours inclined at an angle of 40°, then for another six hours at 20°, and finally for 12 hours supine. Among six patients treated in this way, the authors had only one failure. They hold that 3% to 5% of paraplegics with muscle contractures and intractable bladder spasticity will benefit by this treatment. Also, pain may be relieved by a similar procedure.

[3] *Sem. Hôp., Ann. Pédiat.*, 1961, 9/2: 548/92.

[4] *Presse méd.*, 1961, 5: 173, 6: 227.

Correspondence.

A COMPARISON OF THE NEWER DIURETICS, TRICHLORMETHIAZIDE, BENDROFLUAZINE AND CHLORTHALIDONE, WITH CHLOROTHIAZIDE.

SIR: I have just read the article by Hayes, Sandilands and Emmerson (MED. J. AUST., August 5, 1961) comparing various oral diuretics, and have found it most informative. However, they did not mention the cost of the drugs.

With a National Health Service, I feel it is our responsibility to prescribe the cheaper of two equally effective drugs. With oral diuretics and corticosteroids there are wide variations in price between different preparations, which should play some, if only a secondary, part in determining which drug to prescribe.

Yours, etc.,

Cr Mundy and McCrae Streets, Bendigo, Victoria. August 7, 1961.

J. E. GAULT.

THE COMMONWEALTH SERUM LABORATORIES COMMISSION BILL.

SIR: The Bazeley affair has taught us a lesson which demonstrates how our freedom as medical men is threatened.

It is obvious that when a Government job is accepted under the Health Department, the employee is subject to the regulations of the Civil Service and must give up a fundamental freedom—the right of freedom of expression. Without doubt, this state of affairs extends to the salaried staff, part and whole-time, in the State-controlled hospitals, in addition to the administrative service. It has been argued that there are proper channels within the departments to advance criticism. Possibly this is so in some cases, but the risk of being branded a "trouble maker" often prevents any such statements.

Probably nothing would have been heard of this denial of free speech, even when the matter is of great public concern, if it had not been for the courageous action of Dr. Bazeley. It is a matter of considerable alarm, however, that when the subject is discussed in medical circles, little support is given to the view that freedom of expression for a professional man is as vital as the freedom to conduct practice as he thinks fit. So far as can be ascertained, neither the Federal nor State Councils of the British Medical Association have asserted the rights of the profession under a Government system. From the lack of support of Dr. Bazeley by the profession, we can look forward as potential targets of a National Health Service to negligible help, should any of us break a departmental regulation. One is horrified to see that the action of the Government in this case is actually condoned by a section of medical opinion.

We should realize that "there but for the grace of God go I"—that what happened to Dr. Bazeley can happen to any one of us, under a Government scheme—unless the profession asserts its rights now.

The Commission of Inquiry pointed out that the offence committed by Dr. Bazeley is "traditionally frowned on in Britain and Australia". In view of this, and the punishment meted out to Dr. Bazeley, considerable doubt must be cast upon any statement describing the British N.H.S. in glowing terms made by our British colleagues.

What is the future of the profession in Australia? Already our freedom has been threatened by a political party, and further action is certainly contemplated by our opponents. With the gradual extension of salaried sessions to the honorary staff of public hospitals, more of our members are accepting without demur the conditions of Government-service, which includes the denial of criticism of a system which may or may not be detrimental to the health of the public and to the practice of medicine in Australia.

If any one of us accepts an appointment under any Government without asserting his right to publicly condemn, in the public interest, what he thinks is wrong as a professional man, he will have truly sold his birthright for a mess of pottage. The Australian judiciary claims the right of its judges, although remunerated by the Govern-

ment, to publicly criticize any government action they deem fit. While there is yet time, the medical profession should demand this freedom as a right, and should support it with all the forces at its command.

Yours, etc.,

339 Church Street,
Richmond,
Victoria.
July 28, 1961.

CHARLES M. ROSEBY.

THE VIRUS IN THE ÆTIOLOGY OF CANCER.

SIR: In reply to Dr. K. W. Starr (MED. J. AUST., August 5, 1961), I agree that there is no evidence to support the belief that human cancer is directly related to virus *per se*; nevertheless, I am of the opinion that a case could be made out for its indirect relationship to malignancy, if it could be shown that it interfered with the fodder and soil of the cell.

I believe that malignancy is a metabolic disease, and as previously stated, the soil and the fodder for its commencement and development, especially the latter, must be right. I would be most interested to be able to look into the future and to see the end result of infectious hepatitis.

It has always been of interest to me why some people do not develop clinical cancer, and also why so many people in the terminal phases of malignancy have not been fully investigated. In both these equations I am of the opinion that there is a big field for research.

If it were possible for us to recognize "cancer in the cradle", then some progress would be made. Nevertheless I am not down-hearted, as I am aware of an individual research effort, which could offer a peep-hole into things to come.

Yours, etc.,

241 Oxford Street,
Bondi Junction,
New South Wales.
August 16, 1961.

K. ADDISON.

AN AUSTRALIAN MEDICAL ASSOCIATION.

SIR: May I add my protest to the, unfortunately, few objections which have been raised at the methods used to launch this Association without reference to the general body of members?

Dr. Colville's letter (MED. J. AUST., June 10, 1961) caused me much uneasiness, as much by its honesty as its content. In it he states that the Executive has assumed full responsibility for this Constitution because it would be expensive, time-wasting and unproductive to put it before 11,000 doctors before launching it.

It is, of course, this sort of belief which inevitably takes power to the Executive and away from the general body of members. What is disturbing is that such a decision made in the matter of Pharmaceutical Benefits last year was so badly received by members in this State that an extraordinary general meeting, well attended and vocal, passed a recommendation to the Federal Council that they should not in future make major decisions on behalf of their members without first consulting them.

As this protest would have reached the Federal Council during discussions on the Australian Medical Association, it is highly disturbing that its implications have fallen on deaf ears.

It is worth remembering that the Executive of the British Medical Association accepted the United Kingdom National Health Scheme on behalf of its members without making clear its implications, and I personally am fearful of the growing power of executives and the ease with which the opinions of members are ignored.

There seems no special reason why a new Association must be launched in 1962. If it gives time for reflection on what will be a permanent Constitution, it would not matter if it were delayed another two years. Undoubtedly the machinery is slow for an opinion to pass from local Branch member to Federal Executive, but this is a good reason, not for by-passing the general body, but for smoothing out the lines of communication.

My own objections to the new Association, apart from the fact that it will remove the Executive one step further from the general member, are these:

1. The peculiar differences in each State, in politics, hospital organization, number of members, distances, basic wages and medical fees, require that a great deal of local power be vested in State Branches. A much smaller Federal Executive than the one proposed should be adequate.

2. It appears inevitable that the headquarters of this Association will ultimately be Canberra. I would have less fear of the future if the Executive were more in touch with member opinion and less with Federal politicians.

3. The permanent Federal Secretary must inevitably assume great, if unwritten, power. I feel his position will be similar to certain departmental heads. It is a power I am not happy to entrust lightly to a non-elected official.

As it is now—and always has been—too late to make such views known to the Steering Committee, it is hoped that they may be read, along with those of any other member who has similar qualms to express, by the members of the Federal Executive themselves through your journal.

Yours, etc.,

7 Pitt Street,
Mortdale,
New South Wales.
August 4, 1961.

JOHN MCLEOD.

AIR TRANSPORT OF SOME CASUALTIES.

SIR: I should like to commend Dr. Daly for his letter in your Journal of July 29 regarding the air transport of some casualties. There are a few comments that could be profitably made on the same subject.

I have been transporting the sick by air for some years now, and have been acutely conscious and aware of the dangers to the patient brought about by changes of altitude. Head injuries, where the protective seal of the skull and membranes has been breached, are exposed to grave danger in an unpressurized aircraft at any height above 250 feet above the terrain. The danger becomes progressively worse with increase in height naturally. The reason for this is obvious, in that the intraventricular air expands, thereby expanding the brain tissue as a whole and displacing cerebro-spinal fluid, which must leak through the breach in the membranes and skull. The reverse process takes place on descent, and I feel that, apart altogether from the displacement of cerebro-spinal fluid, that the expanding and compression of already damaged brain tissue must have incalculable deleterious effects on the brain. As well as this mechanical effect, we must also consider the grave risk of sucking infected fluid and blood back into the subarachnoid space on descent.

Equalization of pressures between the ventricles and the subarachnoid space is a very slow process, say by comparison with the equalization of pressures on each side of the tympanic membrane.

Dr. Daly also referred to the possible damage to an injured eye, and I agree that in this type of case that the same precautions should be taken.

The efficient transport of these and many other varieties of illness and injury demand: (*a*) that in a pressurized aircraft the internal pressure should be kept as close to that of the environment, from which the patient was lifted, as possible; (*b*) that in an unpressurized aircraft the minimum safe height should be flown all the way. To do this safely, the aircraft must be of the multi-engined type and must be flown by a pilot experienced in low-flying techniques.

So conscious are we in Queensland of these hazards to the patient that our pilots plan flight to cover the lowest terrain *en route*. Very often we will divert our flights to cross a mountain range at its lowest point. With ground transport one has not got this flexibility, and even if we have to cross a range of mountains with a patient we are assured of the minimum lapse of time at the higher altitude.

I believe that aerial transport is the safest way of evacuating these cases, providing it is undertaken with a knowledge of the risks involved and the best techniques for minimizing these risks.

Yours, etc.,

Royal Flying Doctor Service,
Charleville,
Queensland.
August 11, 1961.

T. J. O'LEARY.

Post-Graduate Work.

UNIVERSITY DEPARTMENT OF MEDICINE, ROYAL MELBOURNE HOSPITAL.

SYMPOSIUM ON PROBLEMS OF RESPIRATORY FAILURE AND ITS MANAGEMENT.

A SYMPOSIUM on respiratory failure will be held, under the ægis of the Royal Melbourne Hospital, on October 27 and 28, 1961. The conference is intended to bring together workers in different fields with a common interest in respiratory problems, and it is hoped that it will therefore have a wide appeal. Special attention will be paid to the rôle of assisted respiration in various circumstances. As a result of financial assistance from C.I.G. Pty. Ltd., no charge will be made for attendance, but registration with the Melbourne Medical Post-Graduate Committee is essential. Those wishing to attend should indicate at which sessions they will be present, and, in particular, whether dinner is required on the evening of Friday, October 27. The lectures and displays are currently planned for the Main Lecture Theatre and adjacent rooms at the Royal Melbourne Hospital, but the new hall, at present under construction in the hospital grounds, may be used. Strict attention will be paid to the time-table laid down. Contributions to discussion will be limited to two minutes in general and to three minutes in the case of speakers invited to open discussions. It is anticipated that contributors will make available their papers, in an appropriate form, for publication in a special issue of the *Royal Melbourne Hospital Clinical Reports*. For this purpose typescripts are requested by October 13. If it proves possible to invite additional guest speakers from interstate or New Zealand, lecture and discussion sessions will also be held on Friday morning and perhaps also on Thursday evening, October 26. The provisional programme is as follows.

Friday, October 27.

11 a.m., exhibit—equipment for intermittent positive-pressure respiration and emergency resuscitation, C.I.G. Pty. Ltd.; exhibit—apparatus and methods for arterial and expired gas analysis and estimation of pH, University Department of Medicine, Royal Melbourne Hospital, with additional apparatus on loan from the Departments of Biochemistry, Cardiology and Anæsthesia, Royal Melbourne Hospital; 1 p.m., Royal Melbourne Hospital Resident Medical Officers' Club clinico-pathological meeting; film—"Respiratory Mechanics in Health and Disease"—Dr. John Read (Sydney) and Dr. Peter Colville (Melbourne) will form a panel for subsequent discussion.

Session I: Anæsthetic Aspects of Respiratory Failure.

Chairman: Dr. Norman James.

2.15 p.m., "Pulmonary Ventilation: Methods and Assessment", Dr. H. Newman; 2.55 p.m., "End-Tidal Samples and their Significance", Dr. W. M. Crosby; 3.10 p.m., "Anæsthesia in Myasthenia Gravis and Allied Disorders", Dr. J. Tucker; 3.40 p.m., "Anæsthesia in the Emphysematous Subject", Dr. P. Currie.

Session II: Blood and Gas Analysis Techniques.

Chairman: Professor R. R. H. Lovell.

4.30 p.m., "Arterial Gas Analysis: Sampling and Principles of Current Techniques", Dr. B. Gandevia; 4.40 p.m., "Problems of Blood pH Determination", Dr. J. Owen; 5 p.m., "Analysis of Expired Gas (Oxygen and Carbon Dioxide)"—(i) "Biochemical Methods", Dr. C. Baird, (ii) "Instrumental Methods", Dr. John Read; 5.45 p.m., "Rebreathing Technique for the Rapid Estimation of Arterial pCO_2", Dr. Blair Ritchie.

Session III: Emergency Resuscitation.

7.15 p.m., film (Dr. Peter Safar, U.S.A.), "Expired Air Resuscitation: Technique and Comparison with Other Methods". The discussion will be opened by Dr. D. Halmagyi (Sydney).

Session IV: Emphysema.

Chairman: Dr. Austin Doyle.

8.15 p.m., "Pathogenesis of Respiratory Failure", Dr. John Read (Sydney); "Management of Respiratory Failure"—(i) "Principles and General Measures", Dr. B. Gandevia, (ii) "Oxygen Therapy and Assisted Respiration", Dr. John Read.

Saturday, October 28.

9 a.m., Lecture demonstration: "A Comparison of the Bird and Bennett Respirators", Mr. F. S. Biggs (C.I.G.). The discussion will be opened by Dr. Ralph Clarke.

Session V: Drowning and Pulmonary Œdema.

Chairman: To be announced.

9.30 a.m., "Drowning and Pulmonary Œdema: Physiological Aspects and their Therapeutic Implications", Dr. D. Halmagyi (Sydney).

Session VI: Respiratory Paralysis.

Chairman: To be announced.

10.30 a.m., "Poliomyelitis and Quadriplegia"; (i) "Physiological Aspects of Respiration", Dr. P. Colville, (ii) "Respiratory Aspects of Management", Dr. J. Forbes; 11.15 a.m., "Tetanus", (i) "Physiological Aspects of Respiration", Dr. John Read, (ii) "Management from the Respiratory Viewpoint", Dr. P. Wilson.

Inquiries.

Inquiries, other than those related to registration, may be directed to Dr. Bryan Gandevia, at the Royal Melbourne Hospital. Telephone: FJ 0266, Extension 461.

MELBOURNE MEDICAL POST-GRADUATE COMMITTEE.

Full-Time Course for Primary F.R.A.C.S.

THE Melbourne Medical Post-Graduate Committee will arrange a six weeks' whole-time course in anatomy, physiology and the principles of pathology for candidates for the Primary F.R.A.C.S., commencing on January 15, 1962. This will be conducted by members of university departments, and is designed for candidates who have already studied these subjects extensively by attending organized courses or privately. It will be a coaching course, planned to give the candidates a complete cover of each subject and to supplement the normal lectures by discussion groups, demonstrations, oral testing and quiz sessions. Enrolments will be limited to 20 candidates and will not be accepted on a part-time basis. Applications for the course are to be made to the Committee not later than September 15, 1961. A fee of £52 10s. will be charged. Forms of application may be obtained from the Committee at 394 Albert Street, East Melbourne.

ST. VINCENT'S HOSPITAL, SYDNEY: GASTRO-ENTEROLOGY UNIT.

A MEETING of the Gastro-Enterology Unit of St. Vincent's Hospital, Sydney, will be held on Thursday, August 31, 1961, at 5.30 p.m. Dr. B. P. Billington will speak on "The Ætiology of Peptic Ulceration". All members of the medical profession are invited to attend.

The World Medical Association.

WORLD MEDICAL ASSOCIATION MEETING: MEDICAL FILMS.

MEDICAL MOTION PICTURES representing 11 nations on four continents will comprise the International Film Programme at the Fifteenth Assembly of The World Medical Association which convenes in Rio de Janeiro, Thursday, September 14, 1961. The film programme is a cooperative effort of The World Medical Association, the American Medical Association and the Brazilian Medical Association. It was organized under the direction of Mr. Ralph P. Creer, Director of the American Medical Association's Department of Medical Motion Pictures and Television. For the fourth consecutive year, the International Film Programme is made possible

by a grant from Johnson and Johnson, New Brunswick, New Jersey. The films, specially selected for their technical and scientific excellence, demonstrate the work of physicians in Brazil, the United States, England, Australia, Canada, Germany, Italy, France, Switzerland, Japan and Denmark.

While all the films are orientated toward highly specialized physician training, some of them involve subject matter which because of publicity is more or less familiar to the general public. "External Cardiac Massage", from the Johns Hopkins Medical Institution, Baltimore, and "Resuscitation of the Newborn", prepared by a special committee on infant mortality of the Medical Society of the County of New York, are two of the films to be shown. Two French physicians are the authors of a film showing the kinds of accidents to which athletes are prone, and how the physician through effective early treatment can prevent athletic injuries from producing serious or chronic problems.

Naval, Military and Air Force.

APPOINTMENTS.

THE following appointments, cha[illegible]etc., are published in the *Commonwealth of Australia Ga[illegible]* No. 58, of July 20, 1961.

NAVAL FORCES OF THE COMMONWEALTH.

Permanent Naval Forces of the Commonwealth (Sea-Going Forces).

Confirmation in Rank.—Surgeon Lieutenant (for Short Service) (on probation) Elie Robert Emmanuel is confirmed in the rank of Surgeon Lieutenant (for Short Service), with seniority in rank of 26th May, 1960.

Citizen Naval Forces of the Commonwealth (Sea-Going).

Royal Australian Naval Reserve.

Appointment.—David Malcolm McLaren is appointed Surgeon Lieutenant, dated 14th February, 1961.

Citizen Naval Forces of the Commonwealth.

Royal Australian Naval Reserve.

Termination of Appointment.—The appointment of John Barry Sturrock as Surgeon Lieutenant-Commander is terminated, dated 16th May, 1961.

AUSTRALIAN MILITARY FORCES.

Australian Regular Army.

Royal Australian Army Medical Corps (Medical).—64010 Captain C. Young is transferred to the Reserve of Officers (Royal Australian Army Medical Corps (Medical)) (Southern Command), 5th May, 1961.

Citizen Military Forces.

Northern Command.

Royal Australian Army Medical Corps (Medical).—To be Captain (provisionally), 2nd June, 1961—162956 Eugene Desmond O'Callaghan.

Royal Australian Army Medical Corps (Medical).—To be Captain (provisionally), 6th June, 1961—139314 Robert Allan Litton Vickers.

Eastern Command.

Royal Australian Army Medical Corps (Medical).—2147976 Colonel K. B. Armstrong relinquishes the appointment of Consultant Ophthalmologist, Army Headquarters, 1st July, 1961, is placed upon the Retired List (Eastern Command), and is granted the military title of Colonel, with permission to wear the prescribed uniform, 2nd July, 1961. 2206958 Lieutenant Colonel W. R. M. Shaw is transferred to the Reserve of Officers (Royal Australian Army Medical Corps (Medical)) (Eastern Command), 13th December, 1960. *To be Lieutenant-Colonel, 16th June, 1960*—2206958 Major (Temporary Lieutenant-Colonel) W. R. M. Shaw.

Southern Command.

Royal Australian Army Medical Corps (Medical).—3101834 Major B. W. Fox is seconded whilst in the United Kingdom, 27th February, 1961. *To be Captain (provisionally), 2nd June, 1961*—3165911 Kenneth Cyril Bowes.

DISEASES NOTIFIED IN EACH STATE AND TERRITORY OF AUSTRALIA FOR THE WEEK ENDED JULY 29, 1961.[1]

Disease.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Northern Territory.	Australian Capital Territory.	Australia.
Acute Rheumatism	2	1(1)	2	..	..	..	..	..	5
Amœbiasis	..	..	..	..	..	..	..	..	..
Ancylostomiasis	2	..	..	..	..	..	4	..	6
Anthrax	..	..	..	..	..	..	..	..	..
Bilharziasis	..	..	..	..	..	..	..	..	..
Brucellosis	..	..	..	..	..	..	..	..	..
Cholera	..	..	..	..	..	..	..	..	..
Chorea (St. Vitus)	..	..	..	..	..	..	..	..	..
Dengue	..	..	..	..	..	..	..	..	..
Diarrhœa (Infantile)	8(8)	3(3)	1(1)	..	..	8	..	20	
Diphtheria	..	1	..	1(1)	..	..	..	2	
Dysentery (Bacillary)	2	..	6(5)	4(2)	..	..	..	12	
Encephalitis	..	..	..	..	..	..	..	..	..
Filariasis	..	..	..	..	..	..	..	..	..
Homologous Serum Jaundice	..	..	..	..	..	..	..	..	..
Hydatid	..	..	..	..	..	..	..	..	..
Infective Hepatitis	102(38)	67(32)	19(6)	17(7)	5(3)	8(2)	..	2	220
Lead Poisoning	..	..	1	..	..	..	..	..	1
Leprosy	..	1(1)	1	..	..	..	7	..	9
Leptospirosis	..	..	2	..	..	..	..	..	2
Malaria	..	1	1	..	..	..	..	..	2
Meningococcal Infection	1(1)	1	..	..	..	..	..	..	2
Ophthalmia	..	..	..	..	..	..	..	..	..
Ornithosis	..	..	..	..	..	..	..	..	..
Paratyphoid	..	..	..	..	..	..	..	..	..
Plague	..	..	..	..	..	..	..	..	..
Poliomyelitis	2	1	3(3)	3(1)	..	..	..	..	9
Puerperal Fever	..	..	1	..	..	..	..	..	1
Rubella	..	11(9)	..	1(1)	5(4)	..	..	2	19
Salmonella Infection	..	..	..	1(1)	1(1)	..	..	..	2
Scarlet Fever	10(2)	..	2	5(2)	..	..	..	..	17
Smallpox	..	..	..	..	..	..	..	..	..
Tetanus	..	..	..	..	..	..	..	..	..
Trachoma	..	..	..	..	4(4)	..	..	..	4
Trichinosis	..	..	..	..	..	..	..	..	..
Tuberculosis	20(14)	17(12)	13(7)	6(6)	6(4)	2	1	..	65
Typhoid Fever	..	..	..	..	..	..	..	..	..
Typhus (Flea-, Mite- and Tick-borne)	..	..	..	..	..	..	..	..	..
Typhus (Louse-borne)	..	..	..	..	..	..	..	..	..
Yellow Fever	..	..	..	..	..	..	..	..	..

[1] Figures in parentheses are those for the metropolitan area.

Royal Australian Army Medical Corps (Medical).—350328 Captain (Honorary Major) J. M. White is appointed from the Reserve of Officers and is appointed Consultant Ophthalmologist, Army Headquarters, and to be temporary Colonel, 2nd July, 1961.

Central Command.

Royal Australian Army Medical Corps (Medical).—To be Captain (provisionally), 20th June 1961—432261 James Fairburn Young.

Western Command.

Royal Australian Army Medical Corps (Medical).—526583 Captain P. W. Burvill is transferred to the Reserve of Officers (Royal Australian Army Medical Corps (Medical)) (Western Command), 8th May, 1961.

Reserve Citizen Military Forces.

Southern Command.

Royal Australian Army Medical Corps (Medical).—The following officers are placed upon the Retired List (Southern Command), and granted a military title equivalent to the substantive or honorary rank shown, with permission to wear the prescribed uniform, 30th June, 1961:—Majors A. O. Green, G. R. Kurrle and Captain W. J. Long.

ROYAL AUSTRALIAN AIR FORCE.

Permanent Air Force.

Medical Branch.

Ivars Haralds Petersons (0221076) is appointed to a four year short service commission on probation for a period of twelve months, 19th April, 1961, with the rank of Flight Lieutenant.

Active Citizen Air Force.

Medical Branch.

No. 23 (City of Brisbane) (Auxiliary) Squadron.—Squadron Leader I. C. Morrison (0210985) is transferred to the Reserve, 13th February, 1961.

Air Force Reserve.

Medical Branch.

The appointment of Pilot Officer C. B. E. Davis (054335) is terminated, 1st January, 1961.

Notes and News.

Sixteenth Annual Symposium on Fundamental Cancer Research.

The sixteenth Annual Symposium on Fundamental Cancer Research will be held on March 1, 2 and 3, 1962, at The University of Texas M. D. Anderson Hospital and Tumor Institute. The subject will be "Conceptual Advances in Immunology and Oncology". The Bertner Foundation Award will as usual be presented at the symposium. Further information may be obtained from the Publications Department, The University of Texas M. D. Anderson Hospital and Tumor Institute, Texas Medical Center, Houston 25, Texas.

Nominations and Elections.

THE undermentioned have applied for election as members of the South Australian Branch of the British Medical Association:

Derrington, Arnold Ward, M.B., B.S., 1947 (Univ. Adelaide), 74 Northumberland Street, Tusmore.

Warren, John Robin, M.B., B.S., 1961 (Univ. Adelaide), 238 Cross Roads, Kings Park.

The undermentioned have been elected members of the South Australian Branch of the British Medical Association:

Jonas, Oswald, M.B., B.S., 1958 (Univ. Adelaide); Johns, R. I., M.R.C.S., L.R.C.P., 1946; Kaines, A. H., M.B., B.S., 1961 (Univ. Sydney).

Deaths.

THE following death has been announced:

ROSTON.—Siegfried Roston, on August 10, 1961, at Sydney, New South Wales.

Diary for the Month.

AUGUST 31.—Queensland Branch, B.M.A.: Bancroft Oration.
AUGUST 31.—New South Wales Branch, B.M.A.: Branch Meeting.
SEPTEMBER 2.—Queensland Branch, B.M.A.: Eighth Branch Convocation; 31st Jackson Lecture; Annual General Meeting.
SEPTEMBER 5.—New South Wales Branch, B.M.A.: Organization and Science Committee.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Medical Secretary, 135 Macquarie Street, Sydney): Medical Officers to Sydney City Council. All contract practice appointments in New South Wales. Members are requested to consult the Medical Secretary before undertaking practice in dwellings owned by the Housing Commission.

South Australian Branch (Honorary Secretary, 80 Brougham Place, North Adelaide): All contract practice appointments in South Australia.

Editorial Notices.

ALL articles submitted for publication in this Journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations, other than those normally used by the Journal, and not to underline either words or phrases.

Authors of papers are asked to state for inclusion in the title their principal qualifications as well as their relevant appointment and/or the unit, hospital or department from which the paper comes.

References to articles and books should be carefully checked. In a reference to an article in a journal the following information should be given: surname of author, initials of author, year, full title of article, name of journal, volume, number of first page of article. In a reference to a book the following information should be given: surname of author, initials of author, year of publication, full title of book, publisher, place of publication, page number (where relevant). The abbreviations used for the titles of journals are those of the list known as "World Medical Periodicals" (published by the World Medical Association). If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full data in each instance.

Authors submitting illustrations are asked, if possible, to provide the originals (not photographic copies) of line drawings, graphs and diagrams, and prints from the original negatives of photomicrographs. Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary is stated.

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